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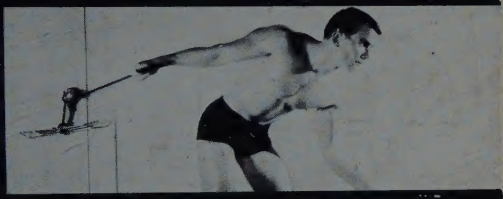

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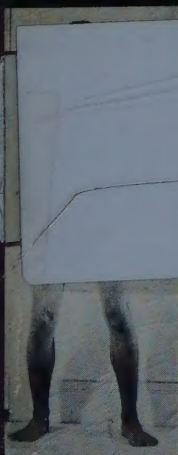

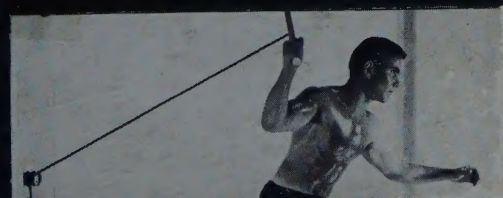

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Bill Keevan of Great Neck, N.Y. is the model for the chapters on isometric exercises with apparatus.

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CONTENTS

1. Before We Begin 9

Why isometric exercise is more effective and easier to do than conventional exercise. How it developed. The "no-movement" principle. Adapting isometric exercise to the individual needs of the sedentary office worker, the housewife, the commuter, the traveller, the student, etc. Isometrics for the bedridden and infirm. *Weight reducing and weight gaining program of diet and isometric exercises.* When and how to exercise. Suggestions for the teen-ager.

2. The Important Muscles of the Body 17

The function of each muscle: The neck, trapezius, external obliques, wrists, forearms, abdominals, biceps, triceps, deltoids, pectorals, latissimus dorsi, erector spinal, calves, thighs and hips. How isometric exercises adds strength to, and firms, these muscles. Testing strength before and after exercising.

3. Isometric Exercises Without Apparatus.....25

Simple, step-by-step exercises to keep fit and trim. Five easy rules to follow for more effective results.

4. Isometric Conditioning for Athletes and Sportsmen.....57

Isometrics as a new, improved technique for increasing strength, speed and endurance, and for reducing possible injury and strain to muscles and tendons. *Special selective conditioning charts for baseball, basketball, bowling, football, golf, swimming, tennis, track and field.* Pre-season conditioning for the athlete.

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5. Isometric Exercises With Apparatus 81

Building up additional strength, speed and endurance, especially helpful for the athlete and sportsman. *Exercise charts* to show how each exercise helps strengthen individual muscles for improved athletic performance. Five easy rules to follow for more effective results.

6. Special Exercises for Athletes and Sportsmen ... 115

Designed to help athlete and sportsman build up their strength more rapidly in *all* muscles used in a particular movement such as pitching, batting, throwing a football, bowling, hitting a golf ball, and serving in tennis. How the athlete can devise his own isometric exercise to build up the particular muscles which need strengthening.

Dedicated to my wife, Sylvia, and my sons Alan and Richard.

1 Before We Begin

ISOMETRIC EXERCISES is one answer for everyone looking for an easier way to be physically fit. Anyone, from a child to a senior citizen, can benefit from a program of isometric exercises. All it takes is three to fifteen minutes a week. There is no need to change clothing and there is no perspiration as in exercise with movement. One to five minutes of exercises every other day will increase your strength to a remarkable degree.

Why is it so important to be physically fit?

We are living in a mechanical push button age; everything is done for us. We ride in cars, elevators and escalators. We sit in front of our television sets for hours on end devouring fattening foods which shorten our life span. Life is movement, and unless we use our muscles we will deteriorate and become old before our time. Hospital patients or the bedridden can use isometric exercises with, of course, their physicians consent. Lying in bed for long periods of time weakens the body considerably. Regular isometric exercises will strengthen the muscles, ligaments and tendons. It will strengthen the heart (which is also a muscle) and it will improve the blood circulation to discourage hardening of the arteries. Our longevity increases with each decade. With a few minutes of exercise each week and with a

well-balanced and nutritious diet, we can look forward to a long, healthful life.

The late President Kennedy was astonished by our lack of good physical condition. He organized the President's Council on Physical Fitness to remedy this situation. Now, with the discovery of isometric exercises, its simplicity and effectiveness, we can all be physically fit.

How it Developed

Doctor Erich A. Muller of Planck Institute, Germany, generally recognized as the founder of isometrics, showed through research and experiments that muscles can be developed and strengthened by pushing and pulling against immovable objects. No matter what is used to push or pull, the object and the muscle being exercised *do not move!* The exercise he developed was nothing more than tensing a muscle for six seconds. This no-movement tension develops and strengthens the muscle where we need it most. It does it more rapidly and with far less muscle fatigue than the conventional method of exercise with movement. The remarkable feature of isometric exercise is that only one muscle contraction is necessary to develop and strengthen *any* muscle. Dr. Muller also found that repeating an exercise did not help to make the muscle stronger or grow larger. Previously, a standard exercise program consisted of approximately fifteen knee-bends, ten sit-ups, ten chin-ups, fifteen push-ups, etc. Now, with the isometric exercise program, we need do each exercise only *once.* Thus, the exercise routine is no longer time consuming or tiring, and requires just a few minutes a week. Moreover, *each individual can fit an isometric training program to his or her needs.* There is no rigid schedule to follow.

People in sedentary jobs will find isometric exer-

cises helpful because they can do most of their exercises in a few minutes seated at their desk. Those who travel a great deal can also benefit from isometric exercises performed in a hotel room or any place they may find themselves. You can keep trim and fit by applying about three quarters of your strength to all your exercises. To obtain greater strength and improvement in sports and athletics, maximum strength (see page 15) should be applied to each exercise. See page 57 for a discussion on sports and athletics.

How to Lose Weight

Although isometrics provide an easier way to keep fit, no one has yet discovered a way to eat everything he likes and lose weight. Crash diets, rice diets and nine-hundred-calorie-a-day drinks may help to shed weight, but none of these diets are good enough to live with day in and day out. Moreover, *no one should undertake a reducing diet without first consulting a physician.* The only sensible way to reduce is by a well-balanced and nutritious diet.

Among the many reasons for weight reducing, health is the most important. Life insurance company tables show that people who are overweight are more prone to diabetes, high blood pressure and heart disease. Also, they are more likely to die at an earlier age than those of normal weight. Most people are aware of this danger but they find dieting difficult. One of the greatest pleasures in life, and the easiest to satisfy, is eating. Emotional upsets and frustrations are often relieved by stuffing ourselves with candy, bread, cake, pie, soda and ice cream, and it is difficult to break this habit of overeating and consuming fattening foods. However, with persistence and determination, and with a goal of a trim, lithe physique, you can and will succeed not

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only in losing weight, but in keeping it off forever. When you get past the first two weeks of dieting you will, in all probability, be on your way down to a normal weight. Your stomach may, at first, rebel; you may also feel hunger pangs, but within these two weeks your stomach will begin shrinking and will be less demanding. A loss of about one or two pounds a week is a satisfactory goal. You may lose more at the beginning, but in the long run you will shed an average of one or two pounds a week until you reach the desired weight. As you shed weight and near your goal, you will begin to experience an exhilarating "its glad to be alive" feeling. You will be more agile, and you will have a real zest for living.

Sensible Reducing Diets

There are many reducing diets. One which I have found to be effective consists of the following: *For breakfast*—one orange, two boiled or poached eggs, one vitamin pill, one date and one glass of skim milk. *For lunch*—cottage cheese with a salad, a date and one glass of skim milk. *For dinner*—a sliced cucumber and tomato, lean meat, vegetables, one date and one glass of skim milk. For an after dinner snack you may have a fresh fruit.

People who lose weight by taking steam baths and massage or by performing strenuous exercise find the weight loss a temporary one, due to a loss of water. This water loss is usually replaced before the day is out. The only true weight loss can be obtained by cutting down on the calorie intake, by eating three nutritious meals a day, and exercising regularly to keep your muscles firm.

A daily, low-calorie, nutritious diet should include the following: lean meat, fish, eggs, skim milk, vegetables, fresh green salads and some fresh fruit.

Starches should be cut to a minimum. You may have a small, baked potato with your dinner, but try to eliminate all bread with your meals. During a reducing program, avoid bread, cake, pies, cookies, sodas, beer, liquor, candy, chocolate, gravies, butter, jelly syrups, sugar, ice cream and sweet cream. After you have reached the desired weight, maintain the low-calorie diet and a modified program of exercise. This will keep you from slipping back to your former overweight condition. Keep periodic check on your weight. You may go off your diet on week ends, but it is not necessary to eat gargantuan meals. Moderation should be your creed.

Weight Gaining Diet and Isometric Exercise

Persons who gain weight easily usually envy those who can eat anything they want and not gain an ounce. And yet there are many thin, unhappy people who would like to put on weight, but in the proper places. No one wants to look so thin that he appears emaciated. Everyone wants to look trim, and they can, by following a definite plan of action.

To gain weight we must first re-examine our physical activities. Such strenuous activities as baseball, basketball, etc., must temporarily be cut down to a minimum. Energy must be conserved if we are to build up our weight. We must try to get eight to ten hours of sleep.

A weight-gaining diet is, of course, an important part of a body building program. To gain weight, you must increase your calorie intake from its present level. Underweight persons find it just as difficult to increase their food intake as overweight persons find in reducing theirs. The diet must not only help to gain weight, it must also be nutritious and well-balanced. It should include proteins such as meat,

fish, eggs and milk, and starches such as potatoes, rice, corn and spaghetti. Vitamins and minerals can be obtained from vegetables, green salads and fresh fruit. Do not strain your digestive system by overeating. You can avoid this by eating between meals, such as an early breakfast and a late breakfast, an early lunch and a late lunch. If you have dinner at six p.m., have a snack two or three hours later. Many of my clients have made remarkable gains in weight by drinking two to three quarts of milk a day. (To some people, on whom milk acts as a laxative, chocolate syrup may be added to the milk to help counter this laxative effect.) However, without exercise, this additional food will either be eliminated or will pile up around your waistline. And, because you must exert yourself as little as possible, isometrics is the most effective form of exercise in a weight-gaining program. When you exercise your muscles you create a demand for more food. This food, when digested, will go into your system, helping your muscles to grow larger and stronger.

As we increase the size of our muscles we naturally increase our body weight. To obtain a sizeable gain in our physiques, we must first develop the largest muscles in the body. These are the thigh and hip muscles and the latissimus dorsi or back muscles. When these are fully developed, we will be nearer our goal of a normal weight and a trim looking physique. Naturally, we cannot exclude exercises for other parts of our body, such as the shoulders, arms, abdominals and calves. We must work towards an all-around symmetrical and balanced physique.

With enough rest, a regular program of exercise, and enough food, within three to six months time,

you will be able to gain sufficient weight and be physically fit.

When and How to Exercise

Any time is a good time to exercise, except immediately after a meal. Wait at least an hour after eating because your food must have at least an hour to be properly digested.

In the beginning, each exercise is done by pulling or pushing against an immovable object for six seconds, using three quarters of your strength. This three-quarter effort will increase your present strength and will help firm your muscles and keep your body trim. As you exercise, concentrate on what you are doing. Don't think of anything else but the particular exercise you are performing and which muscles you are using. It has been found that mental concentration helps to increase the strength and size of muscles. If you want to use maximum strength, you must first exercise, using the three-quarter effort for a few weeks to lessen the likelihood of muscle strain. With maximum effort, your gains in strength will be much greater.

When you begin a maximum effort, gradually increase the pressure the first three seconds and hold the maximum pressure for the next six seconds. This method of gradual pressure eliminates any chance of muscle strain that a sudden maximum effort might produce. *Caution:* Boys under fifteen years of age should not use maximum strength while exercising with apparatus (pages 81 and 115). At this age their muscles are growing faster than their bones, and they have not reached physical maturity. Their bone structure joints, such as knee joints, shoulder joints, etc., have not fully closed, and if maximum pressure were exerted, it would produce too much strain on these areas.

If you are unaccustomed to exercise, it is not necessary to do all the exercises in the book at once. The first week, select the exercises that you feel you need most and then gradually include the others.

How often should we exercise? Every other day is enough to develop, strengthen and firm all the muscles of your body. For the complete development of each muscle, most exercises are done from three progressive positions as shown in the exercises beginning on page 26.

How will you know if isometric exercise is really helping you? How can you measure an increase in strength? Before you begin your exercise program, test yourself by doing and recording as many push-ups, sit-ups and deep knee-bends as you can *without straining.* Then, after a month of isometric exercise test yourself again; you will be pleasantly surprised at the progress you will have made. Where isometric apparatus is used (pages 81 and 115) in your exercises you will gradually be able to exert more strength pulling and pushing. This additional exertion will enable you to develop considerably more strength and more explosive power, which is so necessary in sports and athletics. Everything you do will become easier because all of your muscles will have become stronger. The rest is up to you! Just a few minutes a week of isometric exercise, and health, strength, a firm and trim physique can be yours. Now, let us go about the business of building up our bodies.

2 The Important Muscles of the Body.

IN THIS CHAPTER we will discuss the major muscles, their function, and show how isometric exercises help develop and strengthen them.

Neck Muscles

The function of the neck is to support and rotate the head. One of the first signs of aging is a wrinkled neck. This sign of aging can be held back by exercising the neck regularly. Also, by exercising regularly, people suffering from neck tension can help relieve this condition. A strong neck is necessary in swimming and in contact sports such as football and wrestling. Serious neck injuries have occurred because this part of the body has been neglected. The exercises on page 104 will strengthen your neck.

Trapezius Muscles

The trapezius muscles, located on both sides of the upper back, help keep the shoulders in their proper place. Strong trapezius muscles are important for participants in all sports. Good posture is important for good health. Well-developed trapezius muscles help you maintain good posture. If you are round-shouldered, you will benefit by doing the exercises on pages 56, 90 and 110.

External Oblique Muscles

The external oblique muscles (side and waist muscles), commonly known as the "spare tire," can also

be trimmed down and firmed. When strengthened, external oblique muscles help prevent rupture when we lift heavy or awkward objects. They also help make it easier to carry parcels. A simple and effective way to strengthen the side muscles is to perform the exercises on pages 50 and 94.

Wrist and Forearm Muscles

Strengthening the wrists and forearms is another important part of a body-building program because strong wrists and forearms make our everyday work much easier. For sports training, strong wrists and forearms are important. Football, basketball, baseball, tennis and golf players, in addition to bowlers, fishermen and other sportsmen, find that strong wrists and forearms are a necessity. Isometric exercises will help develop this strength in a relatively short time. For strong wrists and forearms, see the exercises on pages 38 and 100.

Abdominal Muscles

Between the ages of thirty to forty we usually begin to put on added weight. Fat collects around the waist and abdominal wall because it is the least active muscle. The abdominal muscles are one of the most important muscles in the body. They aid in digestion and elimination. If you do nothing else but keep your waist line firm and trim, you will always look and feel in good health. To strengthen the abdominal muscles perform the exercises on page 36.

Biceps and Triceps

Everyone would like to have strong, well-developed arms. Some, because it looks well, others (especially sportsmen and athletes) because it improves their athletic performance. One of the prominent muscles on the upper arm is the biceps, located at the front of the upper arm. Its function is to raise the hand to the shoulder. Although most people consider the

biceps a most important muscle, the triceps serve a more vital function. The triceps, located in back of the upper arm, helps to extend, push and straighten the arm from a bent position. In boxing, the triceps help in throwing of punches, in baseball it helps in throwing and batting the ball, in basketball it aids in shooting long baskets. The triceps also help in throwing the javelin and the shot put, and it helps improve performance in many other sports.

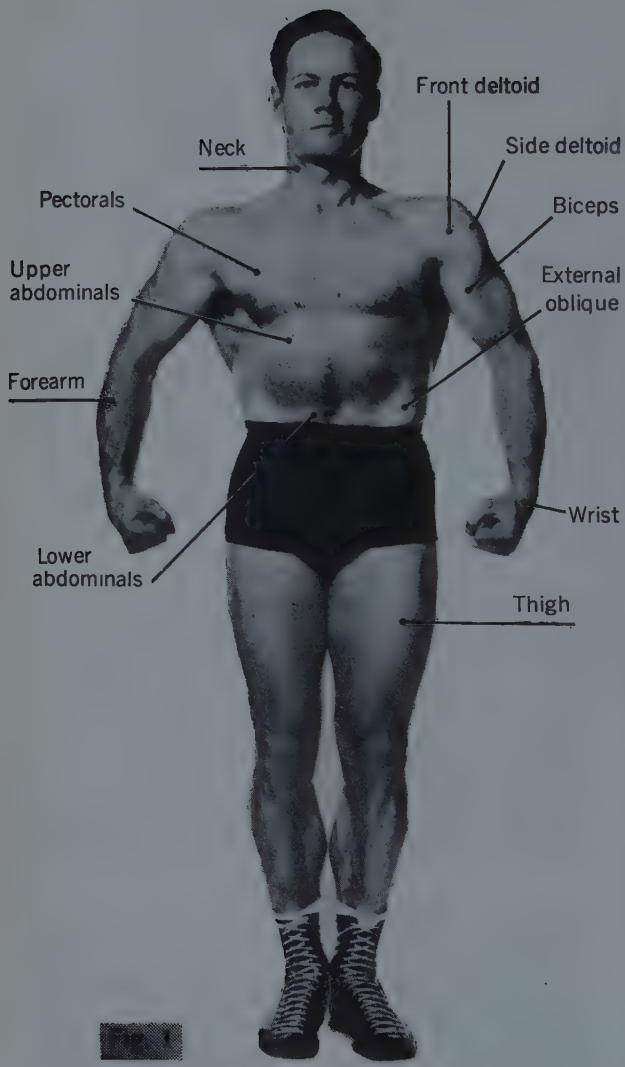
If you have thin arms and want to increase their size, you can do both the biceps and triceps exercises listed on pages 26-28 and 82-84. These exercises, together with a weight-gaining diet (see page 13) will build up the size and strength of your arms. The overweight can do the same exercises for strong, firm and well-developed arms, but they must also follow a reducing diet (see page 12).

Shoulder Muscles

Broad shoulders are envied by men and admired by women. They not only enhance our appearance but they are very important for lifting objects overhead. Powerful shoulders are also essential in most sports. In boxing, the fighter's shoulders usually tire first. In tennis, golf, handball, baseball, football and basketball, the shoulders are continually in action. To build up your shoulders, follow the exercises on pages 26, 40, 82, 96-98 and 110.

Pectoral Muscles

The function of the pectoral muscles is to move the arms forward, downward and across the chest. These muscles, which cover the chest, enhance the appearance of your physique when fully developed. Well-developed pectoral muscles mean more power for the football and tennis players as well as to the swimmers. The pectoral muscles respond quickly to



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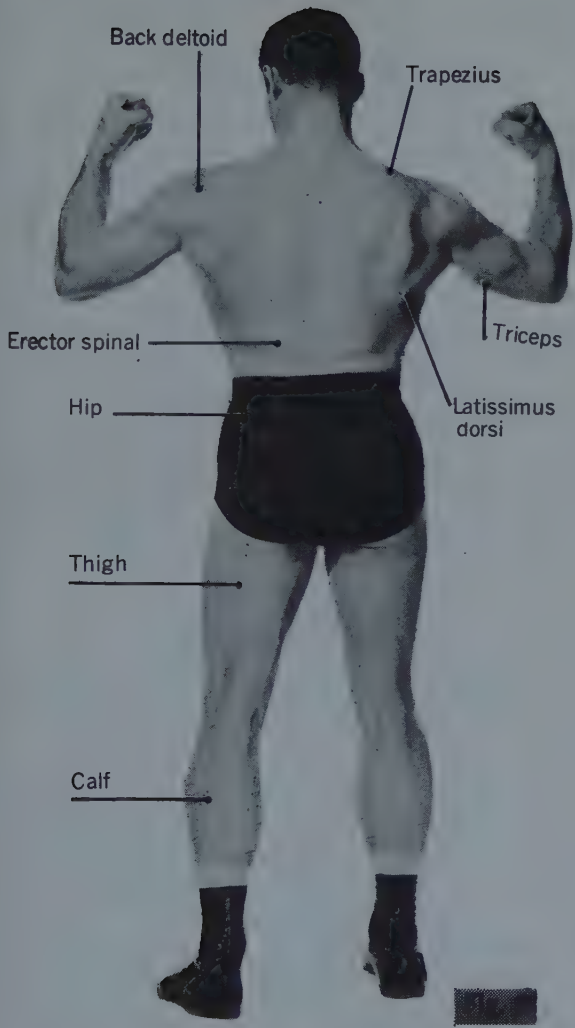


The Important Muscles of the Body.

isometric exercises. For complete development of these muscles, the exercises shown on pages 30 and 92 should be practiced.

Latissimus Dorsi Muscles

The latissimus dorsi are large, fan-shaped, triangular muscles, located in the upper back. Their function is to lower the arms and move them backwards. Swimmers generally have well-developed latissimus dorsi muscles because they use these muscles continually. The latissimus dorsi muscles respond readily to isometrics. The exercises on pages 32 and 88 will greatly benefit and improve your swimming and pole vaulting ability in addition to developing and strengthening these muscles.

You can test the strength of your latissimus dorsi muscles before you begin your isometric exercise program by chinning the bar. Then, after one month, test your chinning again and compare results.

Erector Spinal Muscles

The erector spinal muscles, resembling two large cables running alongside either side of the spine, may not look as spectacular as the latissimus dorsi muscles, but they serve a more important function—to help support the spine and vertebrae. A strong back is absolutely essential for everyone who wants to go through life feeling healthy and energetic. Many people, through lack of proper back exercise, succumb to lower back pains and lumbago, and to strains from lifting comparatively light weights. These weaknesses can be avoided by building strong erector spinal muscles through isometric exercises. In contact sports such as football, baseball and basketball, the spinal erector muscles when fully developed, cushion the back against sudden shock and strains. Strong erector spinal muscles also in-

creases stamina to avoid fatigue. The exercises described on pages 42 and 86 will help strengthen your back.

Thigh and Hip Muscles

The thighs and hips are the largest and most powerful muscles in the body. A strong, well-developed pair of legs are not only pleasing to look at but are also a necessity. These muscles literally help carry us through life. Strong thighs and hips will keep us younger and more active as we become older.

For sports and athletics, strong legs are an obvious necessity. In boxing, baseball, basketball, tennis, track and football, loss of stamina and endurance is partially due to tired legs. When we are young, walking and climbing steps are no problem. But when we reach sixty and seventy it becomes more difficult, especially if we have weak thighs. The exercises described on pages 37, 43-46 and 112 will help build up the thighs and hips.

The Calves

The calves are the most difficult to develop because they are used continually in walking and therefore become hard and tough. It is difficult to increase the size of this muscle. But through perseverance and by following the isometric calf exercises on pages 48 and 102, we can succeed in developing and strengthening the calf muscles. Strong calf muscles are a must for all sports especially in track and field, basketball, baseball, football and tennis.

Now, let's turn to the effective application of isometric exercises to sports and athletics.

DAVID MANNERS, the author, is the director of the Manners Health Studio in Elmont, New York. In addition to body-building, he teaches boxing, judo, karate and wrestling. High school and college athletes have received additional training from David Manners to build up their strength, endurance and speed in football, wrestling, swimming, tennis and baseball. In addition, he has provided isometric training for businessmen and professional people to improve their power hitting in golf.

3 Isometric Exercises Without Apparatus

THE FOLLOWING pages provide a series of isometric exercises *without apparatus* for keeping fit and trim looking, and for strengthening and developing the muscles. All of these exercises are simple and easy to perform. Most of them can be practiced anywhere, at home, at the office, or riding in a train or bus.

For all isometric exercises, the following five rules should be kept in mind:

(1) All exercises using the right arm, right leg or any part of the body on the right side, should be repeated with the left arm, left leg or the corresponding part of the body on the left side, to avoid one-sided development.

(2) The pressure of pulling and pushing, and the resistance to that pressure should be equal, so that there is *absolutely no movement*.

(3) Wait at least one hour after eating before you begin exercising, to allow food to be properly digested.

(4) Before you begin each exercise, take a deep breath through your mouth and hold it for six seconds or for the duration of the exercise, then exhale through your mouth. Maximum effort exercises and some exercises with apparatus require holding both pressure and breath from six to nine seconds. If you have any difficulty holding your breath for six or nine seconds, hold it for five seconds or less.

(5) For better results, concentrate on the exercise and on the muscles being used while you do the exercise.

One-Arm Press—to strengthen and develop front shoulders and triceps muscles.

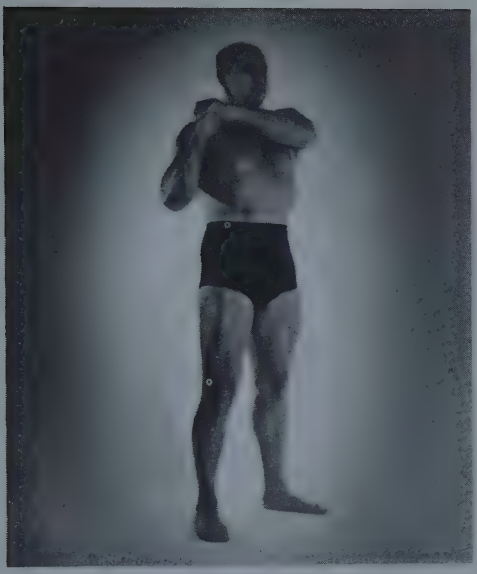
Fig. 3

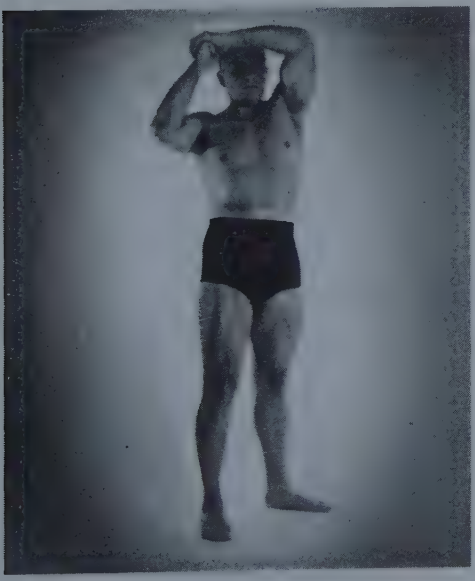
Stand erect, with your feet about twelve inches apart. Clench right fist and bend your elbow. Bring right fist up to the front of your right shoulder. Place left hand over your right fist. Now push upward firmly with right hand, resisting with your left hand. Hold pressure for six seconds; then release.

Fig. 4

Repeat the exercise as described above, but raise your right fist up to forehead level as shown here. Hold pressure for six seconds before releasing.

Repeat the exercise described above. This time, however, raise your right fist overhead to nearly arm's length. Hold the pressure for six seconds before releasing.





One-Arm Curl—to strengthen biceps muscles (front part of upper arms).

Fig. 5

Stand erect, with your feet about twelve inches apart. Clench right fist, arm at side and slightly bent at the elbow. Place your left hand over the clenched fist as shown. Push your fist firmly upward, resisting with your left hand. Hold pressure for six seconds; then release.

Fig. 6

Repeat exercise as above, but raise your clenched fist to about a ninety degree angle as shown here. Hold pressure for six seconds before releasing.

Repeat the exercise described above. This time raise your fist to a position parallel to your right shoulder, with arm bent at elbow. Hold pressure for six seconds; then release.

Chest Exercise—to strengthen and develop pectoral muscles.

Fig. 7

Stand erect, with feet about twelve inches apart. Clasp your hands at the center of chest with your elbows extended outward and slightly away from chest as shown. Press your hands firmly against each other and hold pressure for six seconds; then release.

Fig. 8

Repeat the exercise above, but raise your hands to center of neck, and slightly away from neck as shown here. Hold pressure for six seconds before releasing.

Repeat the exercise described above. This time, however, lower your arms to slightly below chest level. Hold pressure for six seconds; then release.

Rowing Exercise—to strengthen and develop latissimus dorsi (upper back muscles).

Fig. 9

Sit erect on a chair. Bring your left knee up, with foot about twelve inches off the floor. Clasp both hands around your knee, interlocking the fingers and keeping your arms straight as shown. Now pull back firmly with both hands, and resit with your knee. Hold pressure for six seconds; then release.

Fig. 10

Repeat the exercise above, but raise your knee about three inches higher, keeping your elbows slightly bent as shown here. Hold pressure for six seconds before releasing.

Repeat the exercise described above. This time keep your arms half bent and raise your knee higher. Hold pressure for six seconds; then release.

Neck Exercise—to strengthen and firm neck muscles and jaw line.

Fig. 11

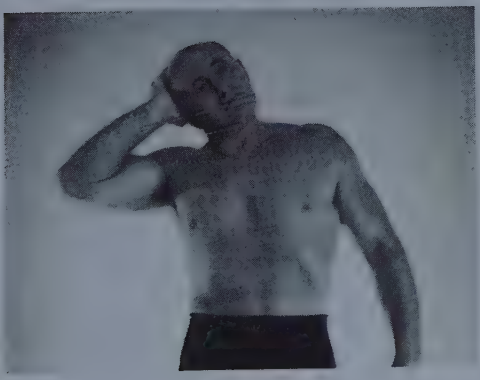
Stand erect, with your feet about twelve inches apart. Clasp hands behind head, interlocking the fingers. Lower your chin to chest as shown. Now push your head firmly up, resisting with the hands. Hold pressure for six seconds; then release.

Fig. 12

Repeat the exercise above, but with your head tilted back. Place hands on forehead, interlocking the fingers as shown here. Push your head forward, resisting with the hands. Hold pressure for six seconds; then release.

Fig. 13

Repeat the exercise described above. This time bend your head sideways toward the right shoulder. Hold your right hand against the right side of the head as shown here. Firmly push your head upward with your hand, resisting with your head. Hold pressure for six seconds before releasing.



Abdominal Exercise—to strengthen and firm upper and lower abdominal muscles.

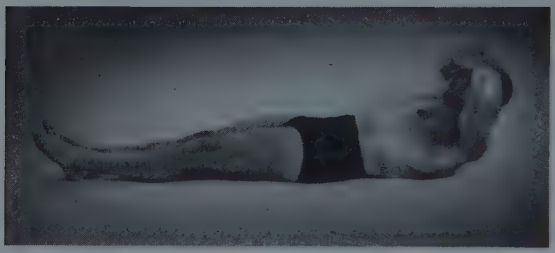


Fig. 14

Lie on the floor with your feet together. Interlock your fingers and place hands on forehead. Now raise your head and shoulders off the floor and touch chin to chest as shown. Try to sit up, resisting firmly with the hands. Hold pressure for six seconds; then release.

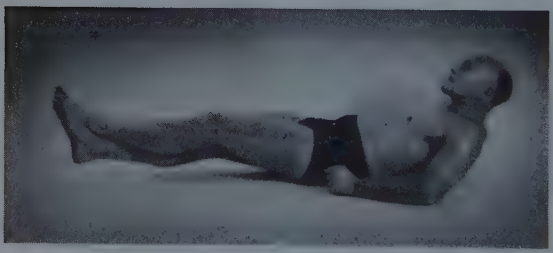
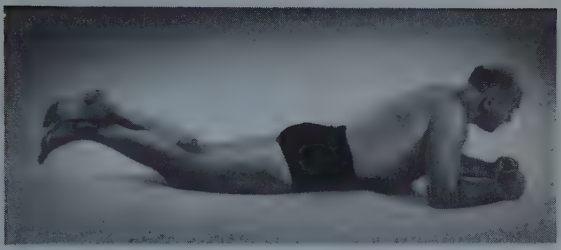


Fig. 15

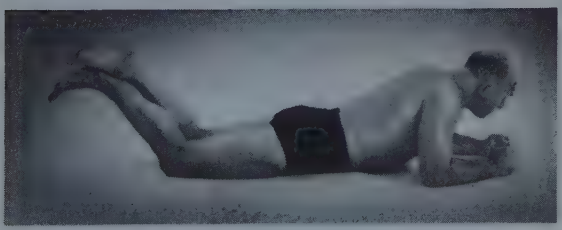
Lie on floor as in exercise above. Place your left foot over your right ankle. Raise both feet about one inch off the floor, bracing yourself as shown here. Push upward firmly with right foot, resisting with left foot. Hold pressure for six seconds before releasing.

Leg Curl—to strengthen the muscles at back of thighs.



Lie on your stomach, with feet close together and head raised off the floor, resting your weight on hands and elbows. Place your left foot over the right ankle and raise feet about two inches off the floor as shown. Push firmly upward with the right foot, resisting with your left foot. Hold pressure for six seconds.

Fig. 16



Repeat the exercise above, but raise your feet about six inches off the floor as shown here. Hold pressure for six seconds.

Fig. 17

Repeat the exercise described above. This time, however, raise your feet to about a ninety degree angle. Hold pressure for six seconds, then release.

Wrist and Forearm Exercise—to strengthen and develop wrists and forearm muscles.

Fig. 18

Sit in a chair. Place the back of your right forearm on your right thigh with the hand extending over your knee. Clench right hand into a fist and place your left hand over it as shown. Now push your right fist upward, resisting firmly with your left hand. Hold pressure for six seconds; then release.

Fig. 19

Repeat the exercise above, but this time place the front of your right forearm on the right thigh as shown here. Hold pressure for six seconds before releasing.

Fig. 20

Repeat the exercise described above. This time, however, hold your right fist and forearm sideways and place on right thigh as shown. Hold pressure for six seconds before releasing.

Front, Side and Back Deltoid Exercise—to strengthen the front, side, back, deltoids

Front Deltoids.

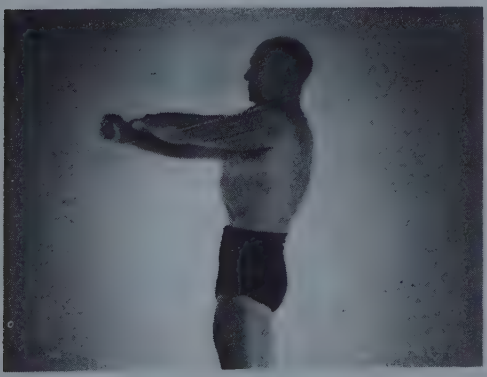
Stand erect with feet about twelve inches apart. Clench your right fist. Fig. 21 Grasp the right wrist with your left hand. Hold the fist about six inches away from front right thigh, keeping arm straight as shown. Push your right arm firmly upward, resisting with the left hand. Hold pressure for six seconds.

Side Deltoids.

Repeat the exercise above, but with Fig. 22 your right arm held at the right side of your body as shown here. Hold pressure for six seconds before releasing.

Back Deltoids.

Repeat the exercise described above. This time, however, raise Fig. 23 your right arm directly in front of you, shoulder high, keeping arm straight as shown. Pull your arm sideways and back, resisting each pull with your left hand. Hold pressure for six seconds, then release.



Erector Spinal Exercise—to strengthen and develop the lower back muscles.

Fig. 24

Lie on your stomach, with feet close together and head slightly raised. Place your hands behind your head, interlocking the fingers as shown.

Now push upward firmly with both your head and your shoulders, resisting with the hands. Hold pressure for six seconds; then release.

Inner and Outer Thigh Exercise—to strengthen and firm the inner and the outer thigh muscles.

Fig. 25

Sit in a chair with feet about twelve inches apart. Place palms of hands on inside of each knee as shown. Now press both thighs firmly together, resisting with hands. Hold pressure for six seconds.

Repeat the exercise described above. This time, however, place your palms on the outer part of each knee. Press knees firmly outward, resisting with hands. Hold pressure for six seconds.

Front Thigh and Knee Exercise—to develop and strengthen front thigh muscles and knees.

Fig. 26

Sit in a chair, with feet close together. Grasp the sides of the chair with your hands. Place back of your left ankle over the front of your right ankle. Raise the feet about two inches off the floor as shown. Now push upward firmly with the right foot and resist with the left foot. Hold pressure for six seconds; then release.

Fig. 27

Repeat the exercise described above, but raise your feet to about four inches from the floor as shown. Hold pressure for six seconds before releasing.

Repeat the exercise above. This time, however, raise your feet to about seven inches off the floor. Hold pressure for six seconds; then release.

Hip and Thigh Exercise—to strengthen and firm the hip and thigh muscles.

Fig. 28

Stand with right side facing wall, feet about twelve inches apart, right foot about twelve inches from the wall. Holding left hand on chair for balance, as shown, place right foot against wall, about six inches off the floor, keeping leg straight. Now press right foot firmly against wall. Hold pressure for six seconds; then release.

Fig. 29

Repeat the exercise above, but turn your back to the wall and place right heel against wall as shown here. Hold pressure for six seconds before releasing.

Repeat the exercise described above. This time, however, face the wall. Place toes of your right foot against wall. Hold pressure for six seconds; then release.

Calf Exercise—to strengthen the calves and the arches.

Fig. 30

Sit on edge of a chair, with your feet about six inches apart. Place palms of hands on thighs as shown. Now push up firmly from toes, resisting with palms. Hold pressure for six seconds; then release.

Fig. 31

Repeat the exercise described above, but raise heels about three inches off the floor. Push up from toes and resist with palms of hand. Hold pressure for six seconds before releasing.

Repeat the exercise above. This time, raise your heels about six inches from the floor. Hold pressure for six seconds; then release.

Side Exercise—to strengthen and firm the side and waist muscles.

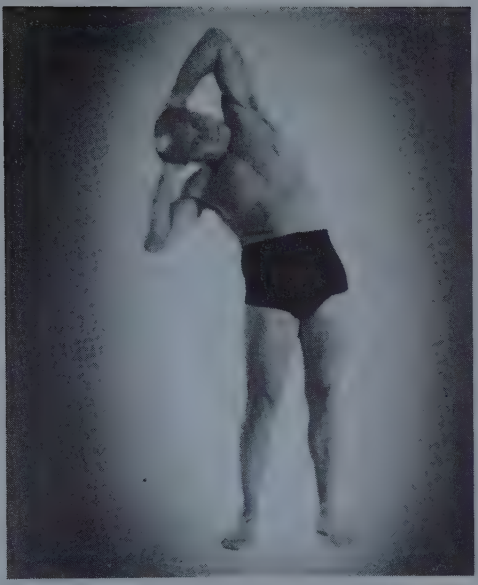
Fig. 32

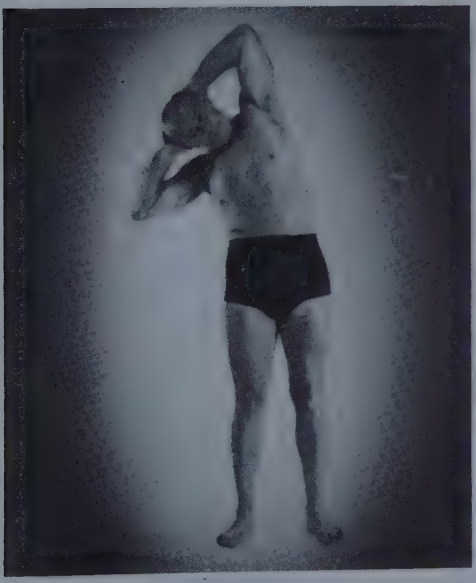
Stand erect, with feet about twelve inches apart. Place your hands behind your head, interlocking the fingers. Bend sideways to the right as far as possible, as shown. Now push body firmly upward, resisting with the hands. Hold pressure for six seconds; then release.

Fig. 33

Repeat the exercise described above, but with your body raised slightly higher, as shown here. Hold pressure for six seconds before releasing.

Repeat the exercise above. This time, however, raise your body up a little higher. Hold pressure for six seconds; then release.





Triceps Exercise—to strengthen and firm the back of the arms.

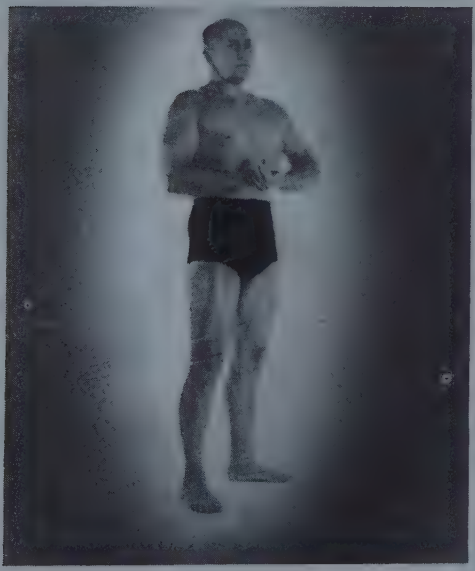
Fig. 34

Stand erect, with your feet about twelve inches apart. Clench the right fist, bend the elbow, and hold fist in front of right shoulder. Grasp back of right fist with left hand as shown. Push downward firmly, resisting with left hand. Hold pressure for six seconds; then release.

Fig. 35

Repeat the exercise described above, but lower the fist to about a ninety degree angle as shown here. Hold pressure for six seconds before releasing.

Repeat the exercise above. This time, lower the fist about six inches. Hold pressure for six seconds; then release.



Finger Exercise—to strengthen and develop the finger muscles.

Fig. 36

Sit in a chair, with feet about twelve inches apart. Bring tips of fingers of both hands together, about three inches away from center of chest. Spread your fingers apart and press them firmly against each other as shown. Hold pressure for six seconds; then release.

Fig. 37

Stand erect, facing wall about three feet away. Place finger tips of both hands against the wall, hands about twelve inches apart, arms straight, as shown here. Now push firmly against wall with fingers. Hold pressure for six seconds; then release.

Sit in a chair facing a table or desk. Place finger tips of both hands on the edge of the table. Press finger tips downward firmly on the table. Hold pressure for six seconds; then release.

Trapezius Exercise—to strengthen upper back and trapezius muscles.

Fig. 38

Sit erect in a chair, with your feet about eight inches apart. Grasp bottom of chair seat with hands and bring shoulders upward until your arms are fully extended. Pull shoulders upward firmly, as shown, resisting with hands. Hold pressure for six seconds; then release.

4 Isometric Conditioning for Athletes and Sportsmen.

FOR THE ATHLETE, it is not enough to practice his particular sport. If he has any intention of reaching top competition, he must also increase his strength and his endurance.

Every day, more athletes, who recognize the need to build their strength and endurance are turning to isometrics (with apparatus) as a quicker and easier way to condition themselves for arduous competition. The isometric training method can help the athlete reduce or eliminate a particular weakness in his performance, resulting from lack of strength or endurance. This method can be applied to any sport. However, in this chapter we will deal only with eight major sports. In each sport we have provided a selective conditioning chart whereby the athlete can readily find the particular isometric exercise to help him overcome most weaknesses in his athletic abilities.

Basketball

Basketball requires great physical effort and all-around body strength, in addition to speed, good reflexes and endurance. In recent years, basketball coaches, recognizing the value of isometrics as an

effective method to increase body strength, have been including isometrics in their physical conditioning program. In the past most of their attention was given to building up the muscles in the legs, the thighs, calves and knees. The upper body was usually neglected because it was considered unimportant. Many coaches now include upper body development together with their leg program. They find that by developing and strengthening the arms and chest muscles, basketball players not only increase their all-around physical strength, but that there is an increase in their ability to grab rebounds as well as in their endurance and stamina. It is also found that a complete body development and strengthening program increases the aggressiveness and self-confidence in the basketball player.

Many coaches have recommended pre-season barbell training exclusively to their players, for complete body-building development. Recently, however, they have found that isometric exercises increased athletic prowess more rapidly and consumed less time and energy. Now, many coaches recommend that the players combine barbell exercises *with* isometric exercises during their pre-season training and do isometrics only during the playing season, as a means of keeping in excellent physical condition. Basketball players have increased their jumping ability by six inches through isometric exercise. This training method not only develops and strengthens muscles, tendons and ligaments, it is also a preventative against such injuries as sprained ankles, wrists and shoulders. Chart I details suggestions for strengthening these areas, in addition to increasing your speed and stamina, and reducing the likelihood of injury. Also include in your training the special grip exercise on page 108.

Chart I: Isometric exercises to condition basketball players.

Exercise	Page	How it improves performance.
TWO-ARM PRESS–Strengthens and develops triceps and front shoulder muscles.	82	Increases ability to shoot at basket from greater distance. Helps prevent arms and shoulders from tiring.
CALF EXERCISE–Strengthens and develops calf muscles and arches.	102	Helps increase speed needed to cover court area. Helps develop leg stamina and avoid early tiring. Stronger calves increase ability to make fast turns, short stops and higher jumps for jump ball, rebounds or tap-ins.
PRESS BEHIND NECK – Strengthens and develops side shoulders and tricep muscles.	96	Increases ability to shoot further. Keeps arms and shoulders from tiring too early in game.
DELTOID EXERCISE – Strengthens and develops front shoulder muscles.	98	Increases shooting power and helps prevent arms and shoulders from tiring.
WRIST AND FOREARM EXERCISE–Develops and strengthens wrists and forearms.	100	Adds more strength for dribbling and helps improve accuracy for shooting baskets from any angle and distance.
GRIP EXERCISE–Strengthens and develops hands and fingers.	108	Increases hand grip power for better control of ball. Helps develop dexterity to steal ball away from opponents and to prevent having ball stolen away by an opponent. Also helps increase hand control of ball for shooting baskets.
KNEE BEND EXERCISE–Develops and strengthens knees, ankles, thighs and hips.	112	Adds speed, stamina and explosive power for running up and down court, fast breaks, turns, pivots, etc. Helps increase jumping ability for rebounds, tap-ins and jump ball. Strengthens legs to prevent tiring. Reduces possibility of injury to knees and ankles.

Chart I: Isometric exercises to condition basketball players.

Exercise	Page	How it improves performance.
ERECTOR SPINAL EXERCISE – Develops and strengthens spinal back muscles.	86	Increases general stamina needed to run up and down court and prevent early fatigue. Cushions jarring physical contact.
ROWING EXERCISE – Strengthens and develops the latissimus dorsi muscles.	88	Strengthened back muscles helps increase arm power to pull ball away from opponent or to prevent opponent from stealing ball from you. Helps prevent upper back fatigue.
ABDOMINAL EXERCISE– Strengthens and firms upper and lower abdominal muscles.	106	Strengthens upper and lower abdominal muscles necessary for running, jumping and throwing. Increases stamina and enables player to absorb jarring physical contact.
UPRIGHT ROWING EXERCISE– Develops and strengthens front shoulders and trapezius muscles.	90	Helps player develop more power for making basket shots from greater distance.
PECTORAL EXERCISE – Strengthens and develops chest muscles.	92	Helps arm action, enabling player to make smoother basket shots.
NECK EXERCISE– Strengthens neck muscles.	104	Helps prevent fatigue in neck muscles and to withstand jarring physical contact as, for example, in jumping up for rebounds.
TWO-ARM CURL– Strengthens and develops biceps muscles.	84	Helps facilitate ball handling in dribbling, shooting or faking throws. Conditions arms to help prevent them from tiring.
SIDE EXERCISE– Strengthens and develops side and waist muscles.	94	Increases player's ability to quickly and easily change dribbling position to either left or right side, to feint an opponent out of position and to lean away from opponent trying to steal ball as player maneuvers for basket shot.

Swimming

Swimming; by itself, is not enough to develop muscles to their greatest potential. Although it is an excellent form of exercise in itself, strength-building exercises must be added if you plan to enter competitive swimming. Most swimmers reach only a certain peak in their swimming because their technique and skill will carry them just so far. To further improve your swimming ability, you must increase your present strength. Muscles such as the latissimus dorsi and erector spinal, as well as the abdominal muscles, forearms, wrists, shoulders, pectorals, legs and foot muscles, all need to be strengthened for improved competitive swimming. Isometric exercises with apparatus, such as those detailed in Chart II, will produce results quicker and more effectively than any other method.

Jim Counsilman, swimming coach of Indiana University, is considered to be one of the greatest swimming coaches in the world. His swimming team broke five world's records in one meet. He includes isometric exercises as part of his conditioning program. It is generally believed that one contraction is enough to strengthen the muscles to their maximum, and that doing any additional will not help them grow stronger any faster. However, it has been reported that Jim Counsilman requires that his athletes do many repetitions, probably to help their endurance. Since his swimmers broke five world's records, you can't argue with success.

Isometric exercise is still in its infant stage. With continued research in this field, there will probably be new methods found to further develop and strengthen muscles.

Chart II: Isometric exercises for conditioning swimmers.

Exercise	Page	How it improves performance.
TWO-ARM PRESS–Strengthens and develops triceps and front shoulder muscles.	82	Increases arm and shoulde strength for speed and endurance swimming. Helps raise arms forwarc and out of water with faster and stronger stroke. Increases endur ance of arm and shoulder to preven early tiring.
KNEE BEND EXERCISE–Develops and strengthens knees, ankles, thighs and hips.	112	Increases power of the frog kick i the breast stroke, the flutter kick i the crawl and the dolphin kick fo dolphin butterfly stroke. Adds mor explosive power to the starting dive and more speed to push-off turn from wall. Adds more explosive power from starting position of back stroke race and for more vigorous push-off turn from wall in back stroke race. Builds up strength o ankles and knees to prevent tiring.
ERECTOR SPINAL EXERCISE – Develops and strengthens spinal back muscles.	86	Increases power and endurance fo all types of swimming, especially the butterfly stroke.
ROWING EXERCISE–Strengthens and develops the latissimus dorsi muscles.	88	Increases endurance and pulling power of arms for more speed in al types of swimming.
CALF EXERCISE–Strengthens and develops calf muscles and arches.	102	Increases leg kick speed and helps prevent legs from tiring early. Adds more power to leg push-off in turn Adds more spring to starting dive.
ABDOMINAL EXERCISE–Strengthens and firms upper and lower abdominal muscles.	106	Helps build up stamina to avoid fa tigue for all types of swimming.

Chart II: Isometric exercises for conditioning swimmers.

Exercise	Page	How it improves performance.
WRIST AND FOREARM EXERCISE– Develops and strengthens wrists and forearms.	100	Adds more power to armstrokes for more speed and endurance.
PECTORAL EXERCISE– Strengthens and develops chest muscles.	92	Adds power to breast stroke, butterfly stroke, crawl and back stroke for more speed and endurance.
NECK EXERCISE– Strengthens neck muscles.	104	Helps to prevent fatigue in all types of swimming, especially in crawl stroke, when head is turned to side for inhalation.
TWO-ARM CURL– Strengthens and develops biceps muscles.	84	Helps build up more powerful arm strokes for all types of swimming.
GRIP EXERCISE– Strengthens and develops hands and fingers.	108	Increases power of hand thrust as it enters water for all types of swimming.
DELTOID EXERCISE– Strengthens and develops front shoulder muscles.	98	Strengthens front shoulder muscles for more powerful strokes in back stroke and in all types of swimming.
PRESS BEHIND NECK – Strengthens and develops side shoulders and tricep muscles.	96	Increased shoulder and arm power enables swimmer to develop more speed and endurance.
SIDE EXERCISE– Strengthens and develops side and waist muscles.	94	Helps increase swimmer's speed in all swimming strokes, and makes it easier to turn on push-off from wall of pool.

Football

Football is a rough, tough, aggressive game. There is more physical contact here than in any other sport. It requires strength in all of your muscles, tendons and ligaments, not only for the power and speed required, but also to avoid football injuries—the football players' greatest fear.

Get yourself in the best possible condition *before* the football season begins. Chart III lists a series of isometric training exercises that will help strengthen and develop the muscles of the body so that there will be less likelihood of being hurt. A well-trained, hard muscled body enables you to sustain physical contact without succumbing to injuries.

In addition to strength football requires explosive power, quick reflexes, ability and speed. The isometric exercises with apparatus in Chart III can help you achieve these requirements.

The neck, one of the most important parts of the body for the football player, should be developed and strengthened so that it can absorb shock and sustain a great deal of punishment. Neck injuries have ended the careers of many potentially great football players. To help strengthen and develop the neck, include the exercises on pages 34 and 56 in your training program.

Since football is a contact sport, the back must be strong enough to take the shock of violent impact and thus avoid being laid up because of a painful back injury. The isometric back exercises on pages 32, 42, 56, 86-88 and 110 can help develop and strengthen the back muscles to withstand punishment.

The abdominal muscles must be firmed and hardened because they are subject to a great deal of stress during a game. The exercises on pages 36, 50 and 94 will help to strengthen these muscles.

Strong hands, wrists and forearms are needed not only to catch forward passes, but also to keep possession of the football. Pass receivers and ball carriers have had the ball stolen or knocked out of their hands because they lacked hand and finger strength. Strong wrists and forearms are also important as defensive weapons. Ball carriers have been tackled and brought down by strong, tenacious hands gripping their ankles or jerseys. To develop strong wrists and forearms see the exercises on pages 38, 100 and 108.

Figs. 74-75 is a special football "throwing" exercise with apparatus to simultaneously strengthen and develop the shoulders, biceps, wrists and forearms.

Strong thighs, hips and calves are needed by all football players. The explosive power needed in the line and in the backfield is based, in part, on the ability of players to move suddenly. This explosive power generates from the thighs, hips and leg muscles. The defensive blocker needs strong leg muscles to help stop, or take his man out of a play. The offensive player needs them to help him break through the line. The backfield runner uses these muscles to generate speed and power going around or through the line, or to fake and pivot. Football players seeking to develop and strengthen the thighs, hips and calves should include in their pre-season training program the exercises described on pages 37, 43-48, 102 and 112.

Chart III: Isometric exercises to condition football players.

Exercise	Page	How it improves performance.
TWO-ARM PRESS–Strengthens and develops triceps and front shoulder muscles.	82	**Offensive plays:** Adds more power to shoulder blocks for holding back defensive linesmen and running interference, blocking out opposing players more easily and more effectively. Increases forward passer's arm and shoulder power for long throws. **Defensive plays:** Increases tackler's ability to bring down ball carrier; helps defensive linesmen to break through offensive blockers to tackle ball carrier.
ERECTOR SPINAL EXERCISE – Develops and strengthens spinal back muscles.	86	Enables player to absorb shock of physical contact on both offensive and defensive plays, thus reducing chance of possible back injuries.
CALF EXERCISE–Strengthens and develops calf muscles and arches.	102	Helps build up the extra leg power and speed the ball carrier needs for an explosive breakaway, and for pulling loose from a tackler. Enables linesmen to maintain enough speed and leg power to run interference for ball carrier and to take out an opponent more effectively. Enables ends to get a fast start down field to receive forward pass, and to fake defensive players out of position to catch the pass.
THE SHOULDER SHRUG – Strengthens and develops trapezius.	110	Adds more power for blocking and for withstanding jarring physical contact.
GRIP EXERCISE–Strengthens and develops hands and fingers.	108	**Offensive plays:** Strengthens hand grip for throwing and catching forward passes. **Defensive plays:** Strengthens tackler's grip for bringing down ball carrier. Strengthens grip for pass interceptions.

Chart III: Isometric exercises to condition football players.

Exercise	Page	How it improves performance.
NECK EXERCISE–Strengthens neck muscles.	104	Reduces possible neck injuries by increasing ability to withstand jarring physical contact.
ABDOMINAL EXERCISE–Strengthens and firms upper and lower abdominal muscles.	106	Reduces possible injuries to midsection by increasing ability to withstand jarring physical contact. Helps prevent fatigue and cramps.
SIDE EXERCISE–Strengthens and develops side and waist muscles.	94	Helps ball carrier twist away from tacklers. Enables player to move quickly to left or right side to make a tackle or block, and to absorb shock of jarring physical contact.
ROWING EXERCISE–Strengthens and develops the latissimus dorsi muscles.	88	Increased strength in back muscles helps defensive player bull offensive blocker out of position to reach ball carrier.
KNEE BEND EXERCISE–Develops and strengthens knees, ankles, thighs and hips.	112	Increases kicking power for field goals, and punts. Increases ball carrier's ability to break away from tackles and snake his way through the line, to pivot and reverse without losing speed or power. Also enables him to build up power for breaking through the defensive linesmen. Gives blockers, protecting forward passer, more leg strength to resist and hold back defensive players trying to smash through to break up forward pass.
PECTORAL EXERCISE–Strengthens and develops chest muscles.	92	**Offensive plays:** Adds power to forward passes for longer throws. Increases arm and shoulder strength of offensive linesmen to ward off defensive rushing. Helps pass receiver absorb slam of ball when catching bullet forward pass.

Chart III: Isometric exercises to condition football players.

Exercise	Page	How it improves performance.
PECTORAL EXERCISE – Strengthens and develops chest muscles.	92	**Defensive plays:** Enables defensive players to withstand shock of offensive shoulder block or any other body contact with opposing players. Helps defensive players push off offensive blockers to get at ball carrier.
WRIST AND FOREARM EXERCISE – Develops and strengthens wrists and forearms.	100	**Offensive plays:** Gives forward passer better control to snap forward passes accurately; helps offensive blockers protect passer from charging tacklers; helps offensive blockers to take out defense more effectively. **Defensive plays:** Increases strength of defensive players to ward off rushing offensive players.
DELTOID EXERCISE – Strengthens and develops front shoulder muscles.	98	Strong shoulders essential for blocking out defensive linesmen and absorbing shock of jarring physical contact. Increases strength to throw passes for longer distances.
PRESS BEHIND NECK – Strengthens and develops side shoulders and tricep muscles.	96	**Offensive play:** Strengthened arms and shoulders help make shoulder blocks more effective to take the defensive linesmen out of play. Increases passer's ability for long throws. **Defensive play:** Increased arm and shoulder strength enables tackler to bring down ball carrier. Helps defensive player absorb impact shock of charging offensive blockers and ball carrier.

Bowling

A bowler can improve his score by increasing the strength of his bowling arm, and of his wrists and fingers, to obtain better ball control. The exercises listed on Chart IV will help develop and strengthen the bowling muscles. Strong back muscles are also a must because bowling requires frequent bending. Caution—since bowling is a one-sided sport, if you are right-handed, you should repeat the same, complete isometric exercise program for your left side as well as for the right side of your body. This will enable you to obtain a symmetrical physique and full physical development. For quicker and more effective results in strengthening and developing your shoulders, forearms and wrists, perform the special bowling exercise with apparatus shown in Figs. 76-77 and include the special exercise on page 108.

Baseball

Baseball requires the ability to throw, hit and run well, in addition to agility, speed and good coordination. When you try out for a professional baseball team, one of the first tests they give you is running to first base. If you don't have the necessary speed, you may not get the chance to show what else you can do. It is not enough to be well-versed in hitting and throwing; you must be in top physical condition at all times. The isometric exercises in Chart V will help you to develop and strengthen those muscles which are necessary for running as well as for hitting and throwing. To achieve the full physical fitness required by baseball, you should follow the complete workout of isometric exercise with apparatus listed in Chart V, in addition to the special batting and throwing exercises with apparatus shown in Figs. 70-73, and the bat-grip exercise on page 108.

Chart IV: Isometric exercises for conditioning of bowlers.

Exercise	Page	How it improves performance.
TWO-ARM CURL–Strengthens and develops biceps muscles.	84	Increases strength for easier ball handling before delivery. Helps to keep arms from tiring.
ROWING EXERCISE–Strengthens and develops the latissimus dorsi muscles.	88	Helps bring ball backward more easily before delivery. Also helps prevent upper back from tiring.
DELTOID EXERCISE–Strengthens and develops front shoulder muscles.	98	Helps add more power for delivery of ball. Builds up stamina to prevent shoulders from tiring.
WRIST AND FOREARM EXERCISE–Develops and strengthens wrists and forearms.	100	Helps increase ball control, by developing stronger wrists and forearms.
GRIP EXERCISE–Strengthens and develops hands and fingers.	108	Stronger hands and fingers helps improve ball control.
KNEE BEND EXERCISE–Develops and strengthens knees, ankles, thighs and hips.	112	Increases leg power for improved footwork. Strengthened ankles and knees builds up endurance to prevent tiring.
ERECTOR SPINAL EXERCISE – Develops and strengthens spinal back muscles.	86	Makes it easier to bend when delivering ball. Increases stamina to prevent strain and tiring.
CALF EXERCISE–Strengthens and develops calf muscles and arches.	102	Strengthens legs, enabling bowler to avoid leg fatigue, and to develop better footwork when delivering ball.

Chart V: Isometric exercises to condition baseball players.

Exercise	Page	How it improves performance.
TWO-ARM PRESS–Strengthens and develops triceps and front shoulder muscles.	82	Increases batting power; develops stronger throwing arm for pitchers, catchers, infielders and outfielders.
ERECTOR SPINAL EXERCISE – Develops and strengthens spinal back muscles.	86	Improves ability to bat with more power. Helps prevent back injury caused by sliding or jarring physical contact in collision with fielders or walls or rails.
CALF EXERCISE–Strengthens and develops calf muscles and arches.	102	Adds speed for base running and for getting faster start on infield plays. Gives outfielders added speed to run down line drives and extra spring to leap higher for fly balls.
SIDE EXERCISE–Strengthens and develops side and waist muscles.	94	Adds more power and speed to batter's swing and throws. Increases speed and strength of infielders for lunging to right or left on infield plays.
DELTOID EXERCISE – Strengthens and develops front shoulder muscles.	98	Enables you to throw ball harder and faster, and to hit the ball with more power and for a greater distance.
KNEE BEND EXERCISE–Develops and strengthens knees, ankles, thighs and hips.	112	Increases base running speed and ability to run down line drives, and leap higher for fly balls. Enables batter to follow-through with power when he swings.
WRIST AND FOREARM EXERCISE–Develops and strengthens wrists and forearms.	100	Improves batter's control for place hitting. Adds strength for power hitting. Enables pitchers, catchers, infielders and outfielders to throw with more snap, speed, power and control.
ROWING EXERCISE – Strengthens and develops the latissimus dorsi muscles.	88	Especially good exercise for pitchers. Helps arm muscles bring ball back with easier motion before throwing.

Chart V: Isometric exercises to condition baseball players.

Exercise	Page	How it improves performance.
GRIP EXERCISE– Strengthens and develops hands and fingers.	108	Develops a stronger batting grip. Enables pitcher to better control his pitches, and enables the catcher and infielders to hold on to the ball especially on a tag play.
UPRIGHT ROWING EXERCISE– Develops and strengthens front shoulders and trapezius muscles.	90	Adds more force to throws and more power to batter's swing. Enables base runner to increase his speed by increasing the power of his arm and shoulder action.
PRESS BEHIND NECK – Strengthens and develops side shoulders and tricep muscles.	96	Increases batting power. Helps develop more powerful throwing arm for pitchers, catchers, infielders and outfielders. Builds up stamina to avoid arm and shoulder fatigue.
TWO-ARM CURL– Strengthens and develops biceps muscles.	84	Improves batter's arm action, enabling him to put more power into his hitting. Helps pitcher throw harder.
NECK EXERCISE– Strengthens neck muscles.	104	Increases player's ability to withstand jarring physical contact, lessening the possibility of injuries to neck.
ABDOMINAL EXERCISE– Strengthens and firms upper and lower abdominal muscles.	106	Strengthens upper and lower muscles necessary for running, jumping and throwing. Helps prevent fatigue and cramps.
PECTORAL EXERCISE– Strengthens and develops chest muscles.	92	Enables player to absorb slam of ball on bad hops, or to stop a "too hot to handle" ball with his chest as well as other jarring physical contacts.
THE SHOULDER SHRUG– Strengthens and develops trapezius.	110	Helps prevent upper back injuries from jarring physical contact such as sliding, or colliding with other fielders, runners or a wall.

Track and Field

On July 25, 1964, Fred Hansen of Rice University, set a new world's record in the pole vault at seventeen feet four inches during the Russian-American Annual Track Meet. During the track meet, the television announcer mentioned that Hansen had been using isometric training to help him improve his performance.

Training for track and field, up until 1950, consisted in the main, of practicing the sport itself. It was believed, at that time, that strength training would slow down the athletes' muscle action and that swimming would soften his muscles. Sprinters were warned against cross-country running because this would harden their leg muscles and slow them up. During the 1950's Otis Chandler and Bob Richards showed that this theory was a fallacy. Both athletes included weight-lifting to their training program and demonstrated that it helped improve their performance. Building up strength does *not* slow down your speed; on the contrary it helps to improve your performance in *all* track and field events.

The isometric exercises detailed on Chart VI is an effective method to help strengthen your muscles where it is needed most. Stronger muscles will enable you to run faster in the sprint, run longer in the endurance races and will enable you to throw the javelin, the hammer, the discus and the shot put a greater distance.

Track and field athletes should include the complete course of isometric exercises with apparatus, as noted on Chart VI. Those athletes who shot put, throw the javelin and the discus, can simulate the varied motions of their particular throw by using the isometric apparatus in a manner similar to that

shown in Fig. 78. Sprinters and endurance runners, high jumpers and broad jumpers can exercise their leg muscles by pushing their shoulder against a door jamb from a simulated "go" position.

Explosive power is necessary in track and field events, such as the shot put, discus and hammer throws as well as the sprints, hurdles and jumps. This explosive power can be increased by following the isometric exercises described in Chart VI, in your pre-season training.

The greatest fear that an athlete has is the fear of injuries, especially to knees and ankles. Track and field events place a great deal of stress on these parts of the body and increases the likelihood of injury or strain. The knee-bend exercise on page 112 not only reduces the possibility of injury, but it also builds up stamina to prevent fatigue. You should start isometric training about two months before the season begins. Coaches who have seen the remarkable improvement athletes have made by combining isometric exercises with weights in their conditioning program, are now confirmed believers in this type of training.

Chart VI: Isometric exercises to condition track and field athletes.

Exercise	Page	How it improves performance.
TWO-ARM PRESS–Strengthens and develops triceps and front shoulder muscles.	82	Helps shot putter and javelin thrower increase his explosive throwing power. Strengthens pole vaulter's arms and shoulders to push body over the bar. Adds more power to runner's arm and shoulder action for sprints and endurance running.
TWO-ARM CURL–Strengthens and develops biceps muscles.	84	Helps pole vaulter pull body up to bar. Adds more power to runner's arm action for sprints and endurance races.

Chart VI: Isometric exercises to condition track and field athletes.

Exercise	Page	How it improves performance.
ROWING EXERCISE – Strengthens and develops the latissimus dorsi muscles.	88	Builds up more strength to help pole vaulter pull his body up to bar.
ERECTOR SPINAL EXERCISE – Develops and strengthens spinal back muscles.	86	Adds more power to hammer thrower's swing and throw. Increases stamina for all track and field events.
UPRIGHT ROWING EXERCISE – Develops and strengthens front shoulders and trapezius muscles.	90	Adds more power to hammer thrower's swing and throw. Adds more power to runner's arm action for sprints and endurance races.
KNEE BEND EXERCISE – Develops and strengthens knees, ankles, thighs and hips.	112	Increases leg stamina for endurance races and increases speed for sprints. Adds power for more distance in broad jump and height in high jump. Increases shot putter's leg power for coming out of crouch position for the throw.
CALF EXERCISE – Strengthens and develops calf muscles and arches.	102	Increases sprinter's explosive power for faster starts and more speed for sprints and endurance races. Builds up stamina to avoid tiring over longer distances, and reduces the possibility of leg cramps. Adds more spring to legs for longer and higher jumps.
DELTOID EXERCISE – Strengthens and develops front shoulder muscles.	98	Strengthens shoulders for running and throwing events.
WRIST AND FOREARM EXERCISE – Develops and strengthens wrists and forearms.	100	Adds strength and better control for more distance in the shot put, javelin, discus and hammer throw.

Chart VI: Isometric exercises to condition track and field athletes.

Exercise	Page	How it improves performance.
GRIP EXERCISE– Strengthens and develops hands and fingers.	108	Improves weight thrower's grip for better control of the shot put, hammer, javelin and discus. Increases pole vaulter's grip for holding pole. Improved grip helps prevent dropping baton on relay stick pass in relay races.
ABDOMINAL EXERCISE– Strengthens and firms upper and lower abdominal muscles.	106	Helps prevent fatigue and cramps for running, jumping and throwing– helps to achieve better performance in all track and field events.
PRESS BEHIND NECK – Strengthens and develops side shoulders and tricep muscles.	96	Builds up stamina to avoid fatigue in sprinting and distance running. Helps pole vaulter push body over and away from bar. Helps increase explosive throwing power for shot put, javelin, discus and hammer throw.
NECK EXERCISE– Strengthens neck muscles.	104	Strengthened neck muscles is a must because it is part of almost every track and field movement.
SIDE EXERCISE– Strengthens and develops side and waist muscles.	94	Adds power for greater distance in shot put, discus, javelin and hammer throw.

Tennis

Tennis is a wonderful form of recreation and an outstanding example of exercise with movement to keep in physical condition. But here, as in other sports, the competitive athlete requires additional conditioning to improve his performance. And here, as in other sports, isometric training supplies the techniques to obtain the added strength and endurance.

Chart VII: Isometric exercises to condition tennis players.

Exercise	Page	How it improves performance.
DELTOID EXERCISE–Strengthens and develops front shoulder muscles.	98	Adds more power to the serve, the forehand drives and volleys. Helps prevent shoulders from tiring.
SIDE EXERCISE–Strengthens and develops side and waist muscles.	94	Increases hitting strength from either left or right side.
KNEE BEND EXERCISE–Develops and strengthens knees, ankles, thighs and hips.	112	Helps increase leg speed to cover court from every position. Strengthens ankles, legs and knees to sustain stops and pivots, minimizing chance of injury. Increases endurance to keep legs from tiring.
PECTORAL EXERCISE–Strengthens and develops chest muscles.	92	Increases hitting power of forehand drives.
WRIST AND FOREARM EXERCISE–Develops and strengthens wrists and forearms.	100	Adds more power to forehand and backhand drives and improves the serve. Helps prevent forearms and wrists from tiring.
ERECTOR SPINAL EXERCISE – Develops and strengthens spinal back muscles.	86	Increases general stamina to avoid early tiring. Adds power to forehand and backhand drives.
ABDOMINAL EXERCISE–Strengthens and firms upper and lower abdominal muscles.	106	Helps develop all-around stamina necessary for running, jumping and hitting. Helps prevent cramps and early fatigue.
CALF EXERCISE–Strengthens and develops calf muscles and arches.	102	Increases the explosive power needed for quick starts and pivots. Helps develop speed and power needed to move backward and forward and from side to side.

Chart VII: Isometric exercises to condition tennis players.

Exercise	Page	How it improves performance.
GRIP EXERCISE–Strengthens and develops hands and fingers.	108	Develops strong grip to hold racket for better control and snap on serves and volleys.
TWO-ARM PRESS–Strengthens and develops triceps and front shoulder muscles.	82	Increases arm strength for power serve, forehand drives and volleys.
PRESS BEHIND NECK – Strengthens and develops side shoulders and tricep muscles.	96	Increases power in serve and enables player to hit stronger drives in backhand and forehand returns.
ROWING EXERCISE–Strengthens and develops the latissimus dorsi muscles.	88	Strengthened back muscles help to deliver more powerful serves and strokes.
NECK EXERCISE–Strengthens neck muscles.	104	Strengthened neck muscles essential for competitive tennis play, and helps to prevent neck fatigue.

Another reason why *all* tennis players should do isometric exercises is that tennis requires strong legs, hands, wrists, forearms, arms and shoulders. Tennis will improve your coordination and your agility, but it has one disadvantage—you use only one arm and this can lead to a one-sided development. However, by combining tennis with the upper body isometric exercises shown on Chart VII, this one-sided development can be corrected. Chart VII also details the isometric exercises with apparatus to help you develop more power in your serve, more speed, more endurance and better control.

Chart VIII: Isometric exercises for conditioning of golfers.

Exercise	Page	How it improves performance.
ERECTOR SPINAL EXERCISE – Develops and strengthens spinal back muscles.	86	Helps increase strength for long drives, tee shots, and a smoother follow-through. Builds up endurance to prevent early fatigue.
SIDE EXERCISE– Strengthens and develops side and waist muscles.	94	Increases ability to hit with more power for greater distances.
WRIST AND FOREARM EXERCISE– Develops and strengthens wrists and forearms.	100	Helps build up control of golf club for increased accuracy in putting. Helps develop more powerful swing.
KNEE BEND EXERCISE– Develops and strengthens knees, ankles, thighs and hips.	112	Adds power to swing for driving ball a greater distance. Helps prevent legs from tiring.

Figs. 78-79 illustrate a special tennis exercise with apparatus which will strengthen and develop the shoulders and triceps, and the wrists and forearms more rapidly and with more effect than the exercises without apparatus. Also include in your training the special grip exercise on page 108.

Golf

Golf requires, among other things, control, timing and enough power in the shoulder and arms to drive a golf ball a long distance. The isometric exercises on Chart VIII were developed for this purpose. These exercises will also help develop the gripping power in your hands and give you better control over the golf club by developing stronger wrists and forearm muscles. Figs. 80-81 is a special golf exer-

Chart VIII: Isometric exercises for conditioning of golfers.

Exercise	Page	How it improves performance.
TWO-ARM PRESS–Strengthens and develops triceps and front shoulder muscles.	82	Increased arm and shoulder strength enables golf player to slam longer drives. Helps keep arms and shoulders from tiring.
GRIP EXERCISE–Strengthens and develops hands and fingers.	108	Helps improve grip and control of golf club.
ROWING EXERCISE–Strengthens and develops the latissimus dorsi muscles.	88	Strengthened back muscles help golfer make longer drives.
PRESS BEHIND NECK – Strengthens and develops side shoulders and tricep muscles.	96	Increases arm and shoulder power for hitting longer drives. Helps to prevent arms and shoulders from tiring.
DELTOID EXERCISE–Strengthens and develops front shoulder muscles.	98	Increases strength for more power driving and for better control of club for more accurate putting.
CALF EXERCISE–Strengthens and develops calf muscles and arches.	102	Adds power to swing for more powerful drives. Builds up leg stamina to prevent early tiring.

cise with apparatus to give you faster, better results in strengthening and developing your shoulders, pectorals, wrists and forearms, enabling you to hit the ball with extra power. Also, include the special exercise on page 108. The golfer who is physically fit can play a better game than one who is out of shape. By being physically fit you can reach the eighteenth hole without tiring. Isometric exercises with or without apparatus can keep you fit.

5 Isometric Exercises With Apparatus.

FOLLOWING IS a series of isometric exercises *with apparatus* for building up the body more effectively than exercises without apparatus. This series of exercises is especially helpful for the athlete as a means of further improving his strength, endurance and speed. Here, as with exercises without apparatus, the athlete should keep in mind and follow the five rules listed below:

(1) All exercises using the right arm, right leg or any part of the body on the right side, should be repeated with the left arm, left leg or other corresponding parts of the body on the left side, to avoid one-sided development.

(2) The pressure used in pulling and pushing, and the resistance to that pressure should be equal, so that there is absolutely no movement.

(3) Wait at least one hour after eating before you begin exercising, to allow the food to be properly digested.

(4) Before you begin each exercise, take a deep breath through your mouth and hold it for six seconds or for the duration of the exercise, then exhale through your mouth. Maximum effort exercises and some exercises with apparatus require holding both pressure and breath from six to nine seconds. If you have any difficulty holding your breath for six or nine seconds, hold it for five seconds or less.

(5) For better results, concentrate on the exercise and on the muscles being used while you do the exercise.

Two-Arm Press—to strengthen the front shoulders and triceps muscles.

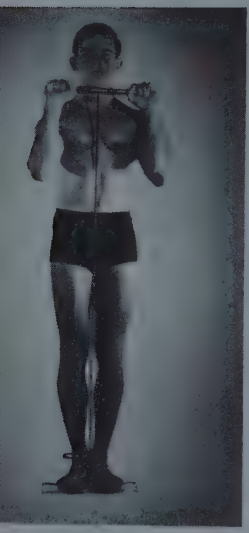


Fig. 39

Stand erect. Place both feet on platform of isometric exerciser. Raise bar to shoulder level using overhand grip. Push upward firmly with both hands and hold pressure for six seconds; then release.

Fig. 40

Repeat exercise above, but raise bar about three inches over forehead level and hold pressure for six seconds before releasing.

Repeat exercise above, but this time raise bar overhead to nearly arm's length. Hold pressure for six seconds and release.

How two-arm press improves your athletic performance.

BASEBALL	Increases batting strength and helps develop more powerful throwing arm for pitchers, catchers, infielders and outfielders. Helps to avoid arm and shoulder fatigue.
BASKETBALL	Increases ability to shoot at basket from greater distance. Helps prevent arm and shoulder from tiring.
BOWLING	Increases shoulder and arm power enabling bowler to make smoother and easier delivery of ball.
FOOTBALL	**Offensive plays:** Adds more power to shoulder blocks when holding back charging defensive linesmen. Enables blockers to run interference and take out opposing players more effectively. Increases power in triceps and front shoulders for throwing longer passes. **Defensive plays:** Increases tackler's ability to bring down ball carrier. Helps ward off impact of charging offensive players. Helps all players avoid early arm and shoulder fatigue.
GOLF	Increases arm and shoulder power for longer drives. Helps to prevent arms and shoulders from tiring.
SWIMMING	Increases shoulder and arm power to improve swimming speed. Also helps prevent arm and shoulder fatigue.
TENNIS	Builds up power in arm and shoulders for stronger serves, drives, and forehand and backhand returns.
TRACK AND FIELD	Added strength to shoulders and arms helps runner maintain stronger arm action in sprints and distance running. It enables the pole vaulter to push body over and away from bar with more ease. Increases the explosive throwing power needed in shot put, javelin, discus and hammer throw.

Two-Arm Curl—to strengthen and develop biceps muscles.

Fig. 41

Stand erect. Place both feet on platform of exerciser. Using underhand grip, raise bar to front of body, arms close to sides. Keeping arms straight, elbows slightly bent as shown, pull upward firmly. Hold pressure for six seconds; then release.

Fig. 42

Repeat exercise above, but raise bar, arms bent to about a ninety degree angle as shown here. Hold pressure for six seconds before releasing.

Repeat exercise above. This time raise bar to shoulder level. Hold pressure for six seconds before releasing.

How two-arm curl improves your athletic performance.

BASEBALL	Adds more power to hitting. Helps to prevent pitcher's arm from tiring.
BASKETBALL	Helps facilitate ball handling in dribbling, shooting or faking throws. Conditions arms to prevent them from tiring.
BOWLING	Makes it easier to handle ball in delivery; helps avoid arm fatigue.
GOLF	Conditions arms to enable golfer to make stronger, smoother swing for longer distance hitting.
SWIMMING	Helps build up more powerful arm strokes by conditioning arm action to function smoother and more easily. Helps prevent early arm fatigue.
TRACK AND FIELD	Develops smoother arm action for sprinter and the endurance runner, and helps avoid arm fatigue. Makes it easier to handle shot put, hammer or discus before throwing.

Erector Spinal Exercise—to strengthen and develop the lower back muscles.

Fig. 43

Stand erect. Place both feet on platform of exerciser. Lower bar to midway between ankle and knee. Grasp bar with both hands, using overhand grip as shown. Pull up firmly using arm and back. Hold pressure for six seconds; then release.

Fig. 44

Repeat exercise above, but raise bar to slightly below knee level as shown here. Hold pressure for six seconds before releasing.

Repeat exercise above. This time raise bar to above knee level. Hold pressure for six seconds; then release.

How the erector spinal exercise improves your athletic performance.

BASEBALL	Helps prevent back injury while sliding, or in collision with other fielders, field fences or walls. Helps batter swing with more power.
BASKETBALL	Helps to maintain the endurance needed to run up and down court, and to prevent early fatigue.
BOWLING	Makes it easier to bend and raise the upper body when delivering ball. Increases stamina to prevent tiring.
FOOTBALL	Enables players to absorb shock of physical contact on offensive and defensive plays, thus reducing chance of possible back injuries. Helps increase stamina to prevent fatigue.
GOLF	Adds explosive power to golfer's drive. Helps prevent back muscles from tiring.
SWIMMING	Conditions muscles to maintain speed and endurance, especially for the butterfly stroke.
TENNIS	Adds more power to forehand and backhand drives. Helps increase endurance and to avoid fatigue through the game.
TRACK AND FIELD	Increases stamina and endurance needed for all track and field events. Adds power to hammer throw, shot put, javelin and discus throw.

Rowing Exercise—to strengthen and develop the latissimus dorsi (upper back muscles).

Fig. 45

Stand erect. Place both feet on platform of exerciser. Bend body over to about a ninety degree angle. Using underhand grip, hold bar downward at arm's length as shown. Pull up firmly with both hands. Hold pressure for six seconds; then release.

Fig. 46

Repeat exercise above, but bend arms and raise bar halfway to chest as shown here. Pull bar up firmly. Hold pressure for six seconds before releasing.

Repeat exercise above. This time raise bar close to chest. Hold pressure for six seconds before releasing.

How rowing exercise improves your athletic performance.

BASEBALL	Helps arm muscles bring ball back with easier motion before throwing, and prevents upper back from tiring. Good exercise for pitchers.
BASKETBALL	Helps increase player's ability to pull ball away from opponents, or to prevent opponent from stealing ball away.
BOWLING	Added strength enables bowler to bring ball back easily and smoothly before delivery. Builds up stamina to prevent upper back from tiring.
FOOTBALL	Increased strength in back muscles helps defensive player pull offensive blocker out of position to reach ball carrier.
GOLF	Strengthened back muscles help golfer make long drives.
SWIMMING	Increases swimming speed by developing arm pulling power through the water.
TENNIS	Strengthened back delivers more powerful serves and strokes.
TRACK AND FIELD	Increases pole vaulter's back muscles strength to help pull body over bar with more ease.

Upright Rowing Exercise—to develop and strengthen front shoulders and trapezius (upper back) muscles.

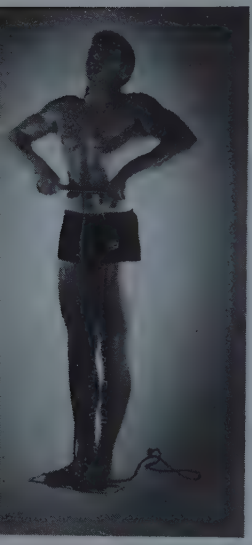


Fig. 47

Stand erect. Place both feet on platform of exerciser. Hold bar at stomach level, elbows pointed outward and upward as shown. Using overhand grip, pull firmly upward. Hold pressure for six seconds then release.

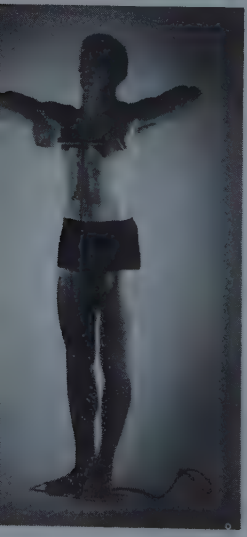


Fig. 48

Repeat exercise above, but raise bar to chest level as shown here. Hold pressure for six seconds before releasing.

Repeat exercise above. This time raise bar to about three inches below neck. Hold pressure for six seconds; then release.

How upright rowing improves your athletic performance.

BASEBALL	Adds more power to batter's swing and to force of thrower's arm action. Enables base runner to increase his speed by increasing power of arm action.
BASKETBALL	Helps player develop more power for making basket shots from greater distance.
BOWLING	Helps bowler bring ball back with ease before delivery.
FOOTBALL	Adds more power for blocking and for withstanding jarring physical contact.
GOLF	Increases power for longer drives and improves control of golf club for putting.
SWIMMING	Helps to improve speed and endurance, and to raise arms out of water with more ease and power for faster and stronger strokes.
TENNIS	Develops easy motion for bringing racket back for serve, drive or volley, and helps to avoid fatigue in upper back muscles.
TRACK AND FIELD	Adds more drive to arm action of sprinter and endurance runner, enabling him to maintain greater speed. Also adds more power to hammer thrower's swing and throw.

Pectoral Exercise—to strengthen and to develop the chest muscles.

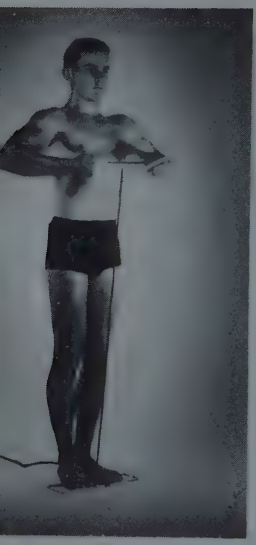


Fig. 49

Stand erect. Place both feet on platform of exerciser. Grasp bar so ends touch palms and hold it directly below chest with elbows pointed outward as shown. Push hands firmly inward. Hold pressure for six seconds; then release.

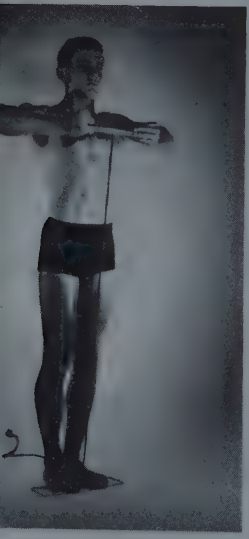


Fig. 50

Repeat exercise above, but raise bar to center of chest as shown here. Hold pressure for six seconds before relasing.

How pectoral exercise improves your athletic performance.

BASEBALL	Enables fielder to absorb slam of ball on bad hops, to help stop hard hit balls with chest and to withstand jarring collision with base-runners or fielders.
BASKETBALL	Helps arm action, enabling player to make smoother basket shots.
BOWLING	Helps condition muscles to enable bowler to make an easier and stronger delivery of ball.
FOOTBALL	**Offensive plays:** Adds power to forward passes for longer throws. Enables pass receiver to absorb slam of ball when he catches bullet pass against his chest. Increases arm strength of offensive linesmen and blockers to ward off defensive rushes. **Defensive plays:** Enables defense linesmen to push off blockers in an effort to get at ball carrier. Conditions players to withstand shoulder block or other body contact from onrushing offensive blockers.
GOLF	Helps arm action, enabling golfer to make smoother, longer drives. Helps in smoother putting action.
SWIMMING	Increases strength for more powerful breast stroke, butterfly stroke, crawl and back stroke.
TENNIS	Increases hitting power of forehand drive.
TRACK AND FIELD	Helps arm action to increase speed in sprints and in endurance running. Helps build up thrust of weight thrower's arm for longer throws in shot put, javelin, discus and hammer throw. Helps pole vaulter push body over and away from bar with a more powerful and smoother motion.

Side Exercise—to strengthen and firm the side and waist muscles.

Fig. 51

Stand erect. Place right foot on platform of exerciser, left foot about twelve inches away. Bend sideway to right, as far as you can. Grasp center of bar with right hand, keeping right arm straight and alongside of body as shown. Pull right side of body firmly upward. Hold pressure for six seconds; then release.

Fig. 52

Repeat exercise above, but raise body about three inches as shown here. Hold pressure for six seconds; then release.

Repeat exercise above. This time raise body to nearly erect position. Hold pressure for six seconds before releasing.

How side exercise improves your athletic performance.

BASEBALL	Increases power for batting and throwing. Adds more speed and strength to infielder's ability to lunge to right or left on infield plays.
BASKETBALL	Increases player's ability to quickly and easily change dribbling position to either left or right side, to feint an opponent out of position, and to lean away from opponent trying to steal ball.
BOWLING	Helps condition sides to prevent strain and to enable bowler to improve ball delivery.
FOOTBALL	Helps ball carrier twist away from tacklers without straining. Enables player to move quickly to left or right side to make a tackle or block, and to absorb shock of jarring physical contact.
GOLF	Helps golfer follow through on his swing with less likelihood of strain, and with more power for greater distance.
SWIMMING	Helps increase swimmer's speed in all swimming strokes, and makes it easier to turn on kick-off from wall of pool.
TENNIS	Increase hitting strength from either left or right side.
TRACK AND FIELD	Adds power for greater distance in shot put, discus, javelin and hammer throw.

Press Behind Neck—to strengthen and to develop side shoulders and triceps muscles.

Fig. 53

Stand erect. Place both feet on platform of exerciser. Using overhand grip, raise bar to back of neck as shown. Push upward firmly. Hold pressure for six seconds; then release.

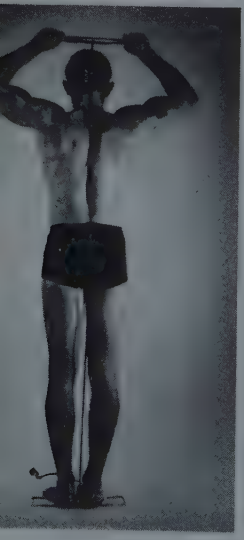


Fig. 54

Repeat exercise above, but raise bar to top of back of head as shown here. Hold pressure for six seconds before releasing.

Repeat exercise above. This time raise bar until arms are nearly straight up. Hold pressure for six seconds; then release.

How press behind neck improves your athletic performance.

BASEBALL	Helps increase batting power and helps develop more powerful throwing arm for pitchers, catchers, infielders and outfielders. Builds up endurance to avoid arm and shoulder fatigue.
BASKETBALL	Increases strength for distance basket shooting and helps prevent arm and shoulder fatigue.
BOWLING	Develops more powerful arm for delivery of ball.
FOOTBALL	**Offensive plays:** Strengthened arms and shoulders help make shoulder blocks more effective to take the defensive linesmen out of play. Increases passer's ability for long throws. **Defensive plays:** Increased arm and shoulder strength enables tackler to bring down ball carrier. Helps defensive linesmen break through offensive blockers to tackle ball carrier.
GOLF	Increases arm and shoulder power for hitting longer drives. Helps to prevent arms and shoulders from tiring.
SWIMMING	Increases shoulder and arm power for more speed and endurance.
TENNIS	Increases power in serve and enables player to hit stronger drives in backhand and forehand returns.
TRACK AND FIELD	Helps build up stamina around neck and shoulders to avoid fatigue in sprints and distance running. Helps pole vaulter push body over and away from bar with more ease. Increases explosive throwing power for shot put, javelin, discus and hammer throw.

Deltoid Exercise—to strengthen and to develop front shoulder muscles.

Fig. 55

Stand erect. Place both feet on platform of exerciser. Using overhand grip, bring bar about twelve inches away from front of thighs. Keep arms straight and extended downward as shown. Pull firmly upward. Hold pressure for six seconds; then release.

Fig. 56

Repeat exercise above, but raise bar to just below chest level as shown here. Hold pressure for six seconds before releasing.

Repeat exercise above. This time raise bar to shoulder level. Hold pressure for six seconds; then release.

How deltoid exercise improves your athletic performance.

BASEBALL	Enables player to make harder and faster throws; helps batter hit ball with more power and for greater distance.
BASKETBALL	Increases strength for making basket shots from a distance. Helps prevent arm and shoulders fatigue.
BOWLING	Increases shoulder power enabling bowler to make easier delivery of ball. Reduces likelihood of shoulder and arm fatigue.
FOOTBALL	Strong shoulders essential for blocking out defensive linesmen and absorbing shock of jarring physical contact. Increases strength to throw passes for longer distances.
GOLF	Helps build up more strength for power driving and to help improve control of club for more accurate putting.
SWIMMING	Strengthens front shoulder muscles for more powerful back strokes, crawl, breast and butterfly strokes.
TENNIS	Adds more power to serve, forehand drives and volleys. Helps prevent shoulders from tiring.
TRACK AND FIELD	Stronger shoulders increases strength and endurance for all track and field events.

Wrist and Forearm Exercise—to strengthen and develop wrists and forearm muscles.

Fig. 57

Sit in chair. Place both feet on platform of exerciser. Grasp bar with underhand grip, and place back of forearms on thighs with wrists extended over knees as shown. Pull hands firmly upward. Hold pressure for six seconds; then release.

Fig. 58

Repeat exercise above, but use overhand grip and place front of forearms on thighs as shown here. Hold pressure for six seconds before releasing.

Repeat exercise above. This time, using underhand grip, apply pressure by turning hands inward as if bending bar. Hold pressure for six seconds; then release.

How the wrist and forearm exercise improves your athletic performance.

BASEBALL	Improves bat control in place hitting. Adds strength for power hitting. Enables pitchers, catchers, infielders and outfielders to throw with more control, more snap, speed and power.
BASKETBALL	Helps to improve ball control in dribbling, and to maintain accuracy when shooting baskets from any angle or distance.
BOWLING	Enables bowler to increase ball control for more accurate and easier delivery.
FOOTBALL	**Offensive plays:** Gives passer better control to snap forward passes. Stronger forearms help offensive blockers protect passer from charging defensive tacklers. **Defensive plays:** Increases strength of wrists and forearms to enable defensive players to ward off offensive rushing with more ease.
GOLF	Helps to improve putting accuracy and to develop more power in swing for distance driving.
SWIMMING	Adds more power to arm strokes for more speed and endurance in competitive swimming.
TENNIS	Increases power of forehand and backhand drives, and enables a stronger serve. Helps keep forearms and wrists from tiring.
TRACK AND FIELD	Helps improve control of shot put, javelin, hammer and discus. Develops strength for longer throws.

Calf Exercise—to strengthen the calf muscles and arches.

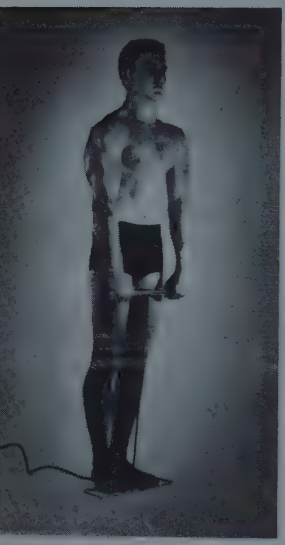


Fig. 59

Stand erect. Place both feet on platform of exerciser. Using overhand grip lower bar to arm's length, holding it in front of thighs as shown. Press toes downward, pull bar upward and try to raise heels, all in one motion. Hold pressure for six seconds; then release.

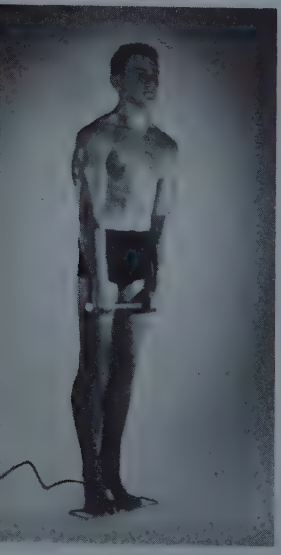


Fig. 60

Repeat exercise above, but stand with heels raised about two inches off floor. Hold pressure for six seconds before releasing.

Repeat exercise above. This time stand with heels raised about four inches off floor. Hold pressure for six seconds before releasing.

How calf exercise improves your athletic performance.

BASEBALL	Adds speed to base running and the extra spring needed for a faster start on infield plays. Gives outfielders added speed to run down line drives and extra spring to leap high for fly balls.
BASKETBALL	Strengthens and adds more speed to legs to enable player to cover the court more easily. Helps develop stamina to keep legs from tiring. Increases ability to make fast turns, short stops and to fake more effectively. Increases jumping ability to grab ball or to tap in rebounds.
BOWLING	Strengthens legs, enabling bowler to avoid leg fatigue, and to develop better footwork when delivering ball.
FOOTBALL	Helps build up extra leg power and speed ball carrier needs for explosive breakaway, and to pull loose from tackler. Enables linesmen to maintain enough speed and leg power to run interference. Enables ends to get faster start to receive forward pass, and to fake defensive players out of position to catch pass.
GOLF	Strong leg muscles enables golfer to add more power to swing for more powerful drives. Adds leg stamina to prevent tiring.
SWIMMING	Increases speed of leg kick; adds more spring to starting dives; increases power for faster and more powerful leg push-off in making turns off pool wall.
TENNIS	Builds up more explosive power for quicker starts and pivots. Adds speed and power to footwork needed for moving backward and forward and from side to side.
TRACK AND FIELD	Adds explosive power for faster starts. Helps increase speed for sprints and endurance races. Builds up legs to avoid tiring over longer distances, and reduces possibility of leg cramps. Adds spring to legs for longer and higher jumps.

Neck Exercise—to strengthen and firm the neck muscles.

Fig. 61

Stand erect, with your feet about twelve inches apart. Clasp hands behind head, interlocking the fingers. Lower your chin to chest as shown. Now push your head firmly up, resisting with the hands. Hold pressure for six seconds; then release.

Fig. 62

Repeat the exercise above, but with head tilted back. Place hands on forehead, interlocking the fingers. Push your head forward, resisting with the hands.

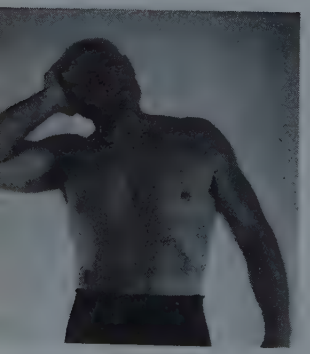


Fig. 63

Repeat as above. This time bend your head sideways toward the right shoulder. Hold right hand against right side of the head. Firmly push your head upward with your hand, resisting with your head.

How neck exercise without apparatus improves your athletic performance.

BASEBALL	Conditions player to withstand jarring physical contact, thus lessening the possibility of neck injuries.
BASKETBALL	Helps prevent fatigue in neck muscles and to withstand jarring physical contact as, for example, in jumping up for rebounds.
FOOTBALL	Reduces possible injuries to neck by increasing ability to withstand jarring physical contact.
SWIMMING	Stronger neck enables swimmer using crawl stroke to bring head in and out of water smoothly and with more ease during inhalation. Helps prevent fatigue in neck muscles.
TENNIS	Strengthened neck muscles essential for competitive tennis play, and helps to prevent neck fatigue.
TRACK AND FIELD	Strengthening the neck is a must, because a strong neck is needed in all track and field events.

Abdominal Exercise—to strengthen and firm the upper and lower abdominal muscles.

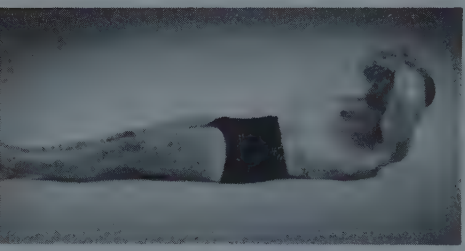


Fig. 64

Lie on the floor with your feet together. Interlock your fingers and place hands on forehead. Now raise your head and shoulders off the floor and touch chin to chest as shown. Try to sit up, resisting firmly with the hands. Hold pressure for six seconds; then release.

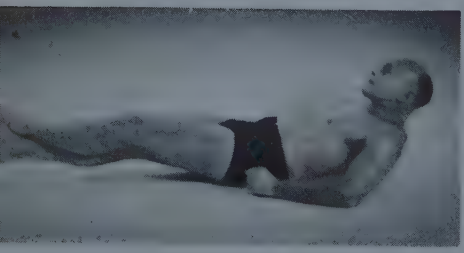


Fig. 65

Lie on floor as in exercise above. Place your left foot over your right ankle. Raise both feet about one inch off the floor, bracing yourself as shown here. Push upward firmly with right foot, resisting with left foot. Hold pressure for six seconds before releasing.

How abdominal exercise without apparatus improves your athletic performance.

BASEBALL	Strengthens and firms muscles necessary for running, jumping and throwing. Helps prevent fatigue and cramps.
BASKETBALL	Helps increase all-around stamina to prevent fatigue, absorb jarring physical contact and avoid cramps.
FOOTBALL	Reduces possible injuries to midsection by conditioning player to withstand jarring physical contact and by increasing player's stamina.
SWIMMING	Strengthens abdominals to increase speed and endurance.
TENNIS	Helps increase all-around stamina to prevent fatigue and cramps.
TRACK AND FIELD	Strengthens muscles necessary for running, jumping and throwing. Helps prevent early fatigue and cramps.

Grip Exercise—to strengthen and develop hands, wrists, forearms and fingers.

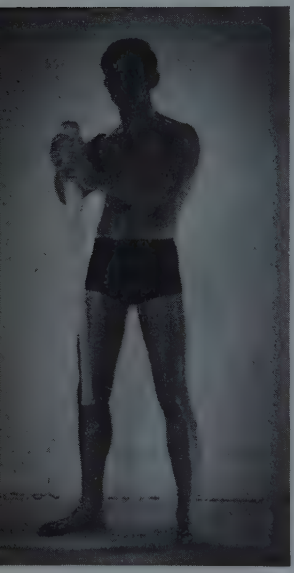


Fig. 66

Stand erect with your feet about twelve inches apart. Grasp the fat end of a baseball bat with both hands, right hand on top and left hand underneath as shown. Then squeeze the bat with maximum strength, using only your hands and fingers. Hold the pressure for six seconds; then release.

How this special bat-grip exercise improves your athletic performance.

BASEBALL	Helps develop stronger batting grip. Enables pitcher to better control his pitches. Helps the catcher and infielders to better grip the ball, especially on tag plays.
BASKETBALL	Increased hand strength makes it easier to hold and control ball when dribbling or making basket shots. Helps to develop dexterity for stealing ball away from opponents.
BOWLING	Stronger fingers help improve ball control and make your delivery with ease.
FOOTBALL	**Offensive plays:** Strengthens grip for throwing and catching passes. Aids ball carrier to avoid having ball stolen from hands. **Defensive plays:** Strengthens tackler's grip for bringing down ball carrier. Strengthens grip for pass interceptions, and for stealing ball away from carrier.
GOLF	Adds more power for better grip and control of golf club.
SWIMMING	Increases force of hands' thrust as it enters water and increases ability to pull arm through water with more power.
TENNIS	Develops strong grip to hold racket for better ball control on serves and volleys.
TRACK AND FIELD	Adds strength to hands and fingers to better grip and control shot put, hammer, javelin and discus. Increases gripping power to hold and control pole before and during the vault. Gives relay runners more control on baton pass.

Shoulder Shrug—to strengthen and develop the trapezius (upper back muscles).

Fig. 67

Stand erect. Place both feet on platform of exerciser. Lower bar to arm's length and hold it against front of both thighs as shown. Using overhand grip, pull firmly upward.

Hold pressure for six seconds; then release.

How shoulder shrug improves your athletic performance.

BASEBALL	Adds more power to batter's swing and to force of thrower's arm action. Enables base runner to increase his speed by increasing power of arm action.
BASKETBALL	Helps player develop more power for making basket shots from greater distance.
BOWLING	Helps bowler bring ball back with ease before delivery.
FOOTBALL	Adds more power for blocking and for withstanding jarring physical contact.
GOLF	Increases power for longer drives and improves control of golf club for putting.
SWIMMING	Helps to improve speed and endurance, and to raise arms out of water with more ease and power for faster and stronger strokes.
TENNIS	Develops easy motion for bringing racket back for serve, drive or volley, and helps to avoid fatigue in upper back muscles.
TRACK AND FIELD	Adds more drive to arm action of sprinter and endurance runner, enabling him to maintain greater speed. Also adds more power to hammer thrower's swing and throw.

Knee-Bend Exercise—to strengthen and to develop the thigh and hip muscles, the knees and the ankles.

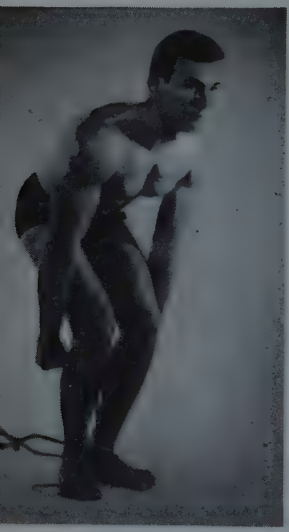


Fig. 68

Stand erect. Place both feet on platform of exerciser. Squat down, placing bar directly behind your calves and keeping arms straight as shown. Using overhand grip, pull upward firmly with your arms and thighs. Hold pressure for six seconds; then release.

Fig. 69

Repeat exercise above but raise back slightly and hold bar behind back of knees, while keeping arms straight as shown here. Hold pressure for six seconds before releasing.

Repeat exercise above. This time raise bar about six inches higher. Hold pressure for six seconds; then release.

How the knee-bend improves your athletic performance.

BASEBALL	Helps increase ability to leap higher for line drives and fly balls. Adds speed for base running and for running down fly balls. Stronger thighs and hips enable batter to hit with more power for greater distance. Reduces possibility of injury to ankles and knees when running the bases and sliding, or when playing on a soft or wet field. Helps avoid tiring around legs and hips.
BASKETBALL	Adds speed, stamina and explosive power necessary to run up and down court and to perform faster breaks, turns, fakes, pivots, etc. Helps increase jumping ability to grab or tap in rebounds and to dominate in the jump ball. Increases endurance to avoid early fatigue around the legs and hips. Reduces possibility of injury to knees and ankles.
FOOTBALL	**Offensive plays:** Increases power to kick longer field goals and to punt for greater distance. Enables ball carrier to maintain the speed and explosive power needed for breakaway running. Strengthens ability to pivot and reverse without losing speed and power. Supplies additional leg drive to enable ball carrier to break through the opposing linesmen. Helps offensive linesmen and blockers maintain stamina to better withstand charging defensive players trying to block a kick, and to better protect the passer. Increases leg power to help offensive linesmen to more effectively keep defensive players from breaking through line. Reduces possibility of injury to ankles and knees. **Defensive plays:** Increases ability of defensive linesmen to break through offensive linesmen to tackle ball carrier. Helps defensive end to break up or intercept long forward passes by increasing his ability to outjump and outrun the offensive end. Helps defensive players to run down field more quickly to tackle ball carrier after the kick off.

How the knee-bend improves your athletic performance.

BOWLING	Increases leg power for improved footwork; strengthens ankles and knees to prevent tiring.
GOLF	Adds power to swing, enabling golfer to drive ball greater distances. Helps prevent early fatigue.
SWIMMING	Adds more strength to the frog kick for breast stroke and the flutter kick for crawl.
TRACK AND FIELD	Increases leg stamina for endurance races and helps increase speed for sprints. Adds power to jumps for more distance in broad jump and more height in high jump. Increases leg power for coming out of crouch position for the shot put. Reduces the possibility of injuring ankles and knees.

6 Special Exercises for Athletes and Sportsmen.

IN THIS CHAPTER we have developed a series of exercises especially designed to help the athlete obtain rapid increase in the strength and power of *all* the muscles used in a particular movement.

In each of the exercises such as "pitching,""throwing," "batting," etc., the athlete simulates the movement of the "pitcher," "thrower," "batter," etc. In each exercise, the athlete is pushing or pulling against the isometric apparatus. The result is, of course, a no-movement exercise to develop his muscles.

While there are only six exercises shown here, the same procedure can easily be applied to all sports to build up power, speed or endurance, by simulating such movements as punting, "taking off" in jumping, throwing weights in track and field, back hand drive in tennis, etc. In each instance, determine first, which particular movement you want to strengthen, and at what point in the movement. Then, devise your own three-stage isometric exercise simulating the movement against the resistance of isometric apparatus or against some immovable object such as a door, a wall, etc. The result will be a no-movement exercise which will bring into play all of the muscles needed for that particular movement. Here, as with previous isometric exercises, you should keep in mind and follow the five rules listed on page 81.

Baseball Pitching Exercise—to strengthen the shoulders, biceps, wrists and forearms for faster and stronger pitching.

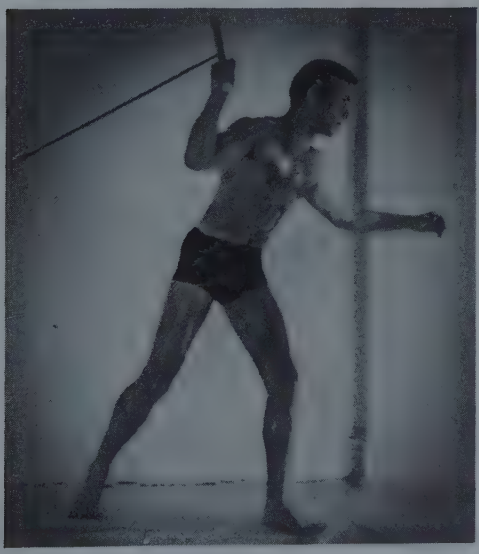
Fig. 70

Tie platform end of exerciser to closed doorknob. Grasp bar with right hand. Stand sideways, feet about twelve inches apart, left foot forward. Raise right hand straight back, slightly below shoulder height, wrist and elbow slightly bent as shown. Pull right hand forward using maximum strength. Hold pressure for six seconds; then release.

Fig. 71

Repeat exercise above, but raise your arm to about a ninety degree angle as shown here. Hold pressure for six seconds before releasing.

Repeat exercise as described above. This time, however, bring arm forward, slightly above shoulder height and about twelve inches away from your shoulder. Hold pressure for six seconds; then release.



Baseball Batting Exercise—to strengthen shoulders, pectorals, triceps, wrists and forearms for more hitting power.

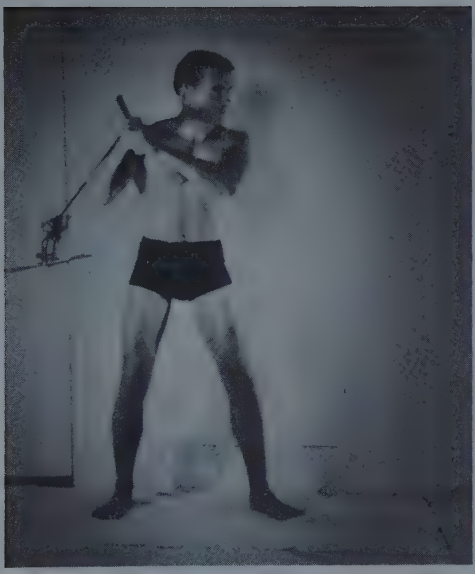
Fig. 72

Tie the platform end of exerciser to a closed doorknob. Grasp the bar with both hands and bring it close to your right shoulder, in a batting stance. (Left-handed hitters reverse stance.) Stand with feet about eighteen inches apart, left foot forward as shown. Push bar forward from shoulder with maximum strength. Hold pressure for six seconds; then release.

Fig. 73

Repeat the exercise as above, but bring the bar down and forward, and about twelve inches from your shoulder as shown here. Hold pressure for six seconds before releasing.

Repeat the exercise described above. This time, however, bring the bar forward about another six inches. Hold pressure for six seconds; then release.



Football Throwing Exercise—to strengthen the shoulders, the biceps, the wrists and the forearms for longer throws.

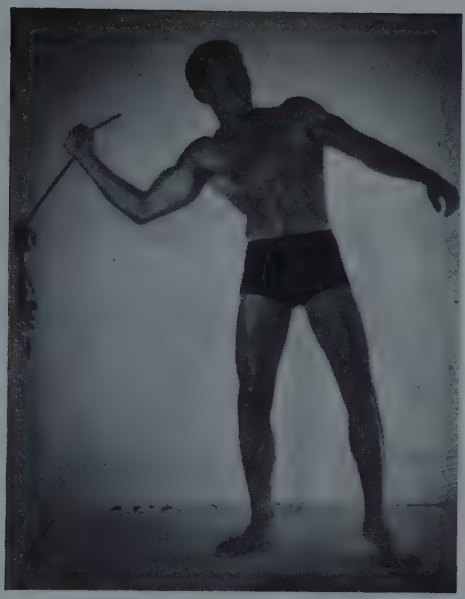
Fig. 74

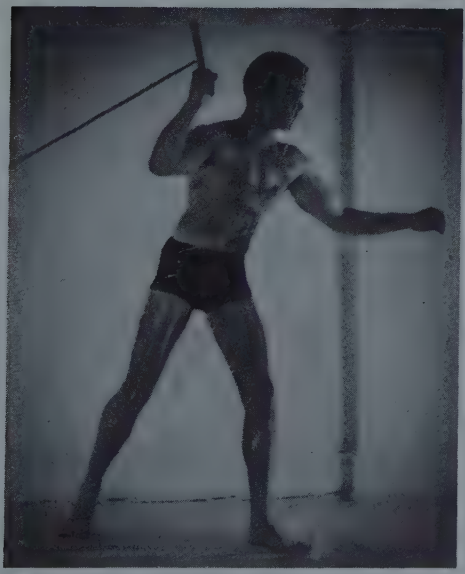
Tie the platform end of the exerciser to a closed doorknob. Grasp the bar with your right hand. Stand sideways with feet about twelve inches apart, left foot forward. Raise your right hand straight back, slightly below shoulder height, wrist and elbow slightly bent as shown. Pull your right hand forward using maximum strength. Hold pressure for six seconds; then release.

Fig. 75

Repeat the exercise as above, but raise your arm to about a ninety degree angle as shown here. Hold pressure for six seconds; then release.

Repeat the exercise described above. This time bring your arm forward, slightly above shoulder height and about twelve inches away from your shoulder. Hold pressure for six seconds before releasing.





Bowling Delivery Exercise—to strengthen shoulders, forearms and wrists for better control and stronger delivery of ball.

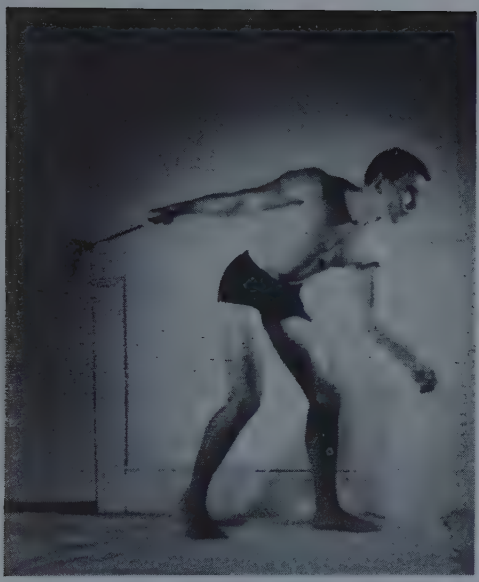
Tie the platform end of an exerciser to a closed doorknob. Grasp the center of the bar with your right hand, using underhand grip. Stand in a bowling position with your feet about eighteen inches apart, left foot forward and knees slightly bent as shown. Keeping arm straight, pull forward with maximum strength. Hold pressure for six seconds; then release.

Fig. 76

Repeat the exercise as above. This time lower the bar to about twelve inches from right thigh as shown here. Hold the pressure for six seconds before releasing.

Fig. 77

Repeat the exercise described above. This time, however, bring your arm forward and down, holding the bar alongside of your right thigh. Hold pressure for six seconds before releasing.



Tennis Power Service Exercise—to strengthen shoulders, triceps, wrists and forearms for more powerful tennis serves and strokes.

Tie the platform end of an exerciser to a closed doorknob. Grasp one
Fig. 78 end of the bar with your right hand, using a tennis grip. Stand with your feet about twelve inches apart, left foot forward. Bring the right hand over your right shoulder and lean back on the right side as shown. Push right arm upward with maximum strength. Hold the pressure for six seconds; then release.

Repeat the exercises as above, but
Fig. 79 raise the bar overhead to nearly arm's length, as shown. Hold the pressure for six seconds before releasing.

Repeat the exercise described above. This time, however, bring the bar forward about twelve inches, keeping your arm straight. Hold the pressure for six seconds; then release.

Power Golf Drive Exercise—to strengthen shoulders, triceps, pectorals, wrists and forearms for more powerful golf drives.

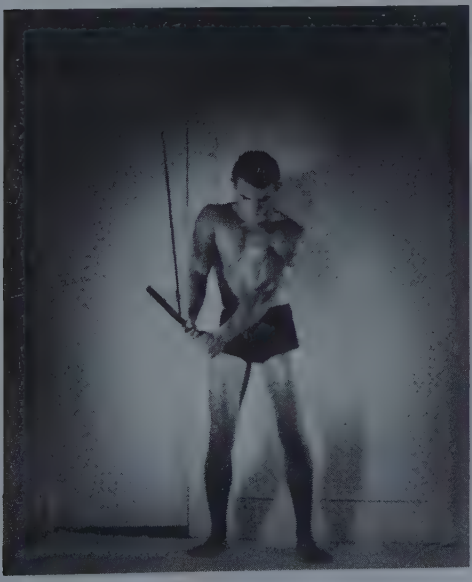
Fig. 80

Wedge the platform end of exerciser on other side of closed door. Grasp bar with both hands, using golf grip. Bring the bar over your right shoulder. Stand sideways with your feet about twelve inches apart and the left knee slightly bent as shown. Pull down with maximum strength. Hold pressure for six seconds; then release.

Fig. 81

Repeat the exercise as above, but lower the bar to the level of your right hip, as shown. Hold the pressure for six seconds before releasing.

Repeat the exercise described above. This time, however, bring the bar to about twelve inches in front of your body. Hold the pressure for six seconds; then release.



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Manners
Power of isometrics

David Manners, author of **HERE'S POWER FOR YOU,** became interested in isometric exercises long after he had obtained recognition as a successful body building teacher. Everything he observed about this remarkable training method led him to explore it further, and he finally added it to his own teaching methods, with astonishingly good results.

David Manners was especially impressed with the improved athletic performances obtained by athletes and sportsmen who used isometrics to increase their strength, improve their muscular control and build up their endurance. Drawing on the experience of these athletes, and on his own extensive knowledge and experience, he devised an isometric training system that makes it possible for an athlete or sportsman to rapidly improve his performance without time consuming exercises or elaborate training equipment. One feature of this system is the selective training charts in this book, which make it easy for an athlete to find the particular exercise he requires to build more power, finer muscular control and more endurance in his arms, legs, chest, shoulders, etc.